

Consolidated Case Nos. 14-72553 and 14-72602

IN THE UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

HELPING HAND TOOLS, *et al.*

Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, *et al.*,

Respondents,

and

SIERRA PACIFIC INDUSTRIES,

Respondent-Intervenor.

*On Petition for Review of a Final Decision of the
Environmental Protection Agency, 79 Fed. Reg. 35,543 (June 23, 2014)*

**PETITION FOR PANEL REHEARING AND REHEARING *EN BANC* OF
PETITIONERS HELPING HAND TOOLS AND ROBERT SIMPSON**

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CORPORATE DISCLOSURE STATEMENT

Pursuant to Federal Rule of Appellate Procedure 26.1, Petitioner Helping Hand Tools certifies that it has no parent companies and that no publicly held corporations own 10 percent or more of Petitioner.

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GLOSSARY

AAQIR	Ambient Air Quality Impact Report
AER	Petitioners 2HT and Simpson's Additional Excerpts of Record
BACT	Best Available Control Technology
EAB	Environmental Appeals Board
EPA	U.S. Environmental Protection Agency
NSR	New Source Review
PER	Petitioners' Excerpts of Record
PSD	Prevention of Significant Deterioration

INTRODUCTION

This Petition seeks rehearing, either by the panel or by the Court *en banc*, under Federal Rules of Appellate Procedure 35 and 40. This proceeding involves the following questions of exceptional importance:

- 1) When a prevention-of-significant-deterioration (“PSD”) permit applicant’s proposed facility uses both a dirtier fuel and a cleaner fuel, is the applicant’s claimed business purpose of using the dirtier fuel “as much as possible” a valid justification for capping usage of the cleaner fuel at 10%, or does that purpose conflict with the Clean Air Act’s mandate that greater use of “clean fuels” must be considered as a potential best available control technology (“BACT”)?
- 2) Does the panel’s newly-created “incidental use” test for EPA’s redesign-the-source policy (i.e. greater uses of clean fuels used only incidentally in a proposed facility need not be considered as potential BACT) conflict with EPA’s and the Seventh Circuit’s “fundamental redesign” test (i.e. greater uses of clean fuels that would not change a proposed facility’s fundamental scope must be considered as potential BACT)?

In addition to these questions, rehearing is necessary because the panel misunderstood critical facts in the record, including:

- The Environmental Appeals Board (“EAB”) made no findings, and it was improper for the panel to conclude, that allowing incrementally greater use of natural gas above 10% would require any physical or technical changes to the facility’s proposed design, and therefore there was no factual basis for EAB’s finding that such greater use would redefine-the-source;
- EAB made no findings, and it was improper for the panel to conclude, that only burning biomass (and not burning natural gas) is “inherent” to the facility’s proposed design, whereas burning natural gas is merely “incidental” to Sierra Pacific’s purpose; and
- Adding a solar component to the proposed facility’s rooftops is not comparable to converting the facility into a nuclear power plant.

There is an overriding need for national uniformity in interpreting EPA’s redefine-the-source policy because it affects national application of the Clean Air Act’s PSD permitting program. Only one other United States Court of Appeal, the Seventh Circuit, has interpreted EPA’s “redefine the source” policy. While the panel claimed to have been guided by *Sierra Club v. EPA*, 499 F.3d 653, 655 (7th Cir. 2007) and prior EAB precedent, *see* Opinion at 15, by validating Sierra Pacific’s “as much as possible” purpose, and by creating a new “incidental use” test, the panel substantially and erroneously altered EPA’s redefine-the-source policy under these precedents. Therefore, rehearing it warranted.

ARGUMENT

I. The Panel’s Opinion Contravenes the Clean Air Act’s “Clean Fuels” Mandate, and Creates an “Automatic BACT Off-Ramp” for Future PSD Applicants, by Validating a PSD Applicant’s Avowed Purpose of Using a Dirtier Fuel to the Exclusion of a Co-Located Clean Fuel

This case is the first time that an Environmental Appeals Board has found that incrementally greater use of a co-located clean fuel already used in the proposed facility (here, natural gas) would “redefine the source” because of the PSD applicant’s “basic business purpose” of using a dirtier fuel (here, biomass) “as much as possible.” EAB Order at 62, 63 [PER69, PER70]. The panel erred by holding that Sierra Pacific’s claimed purpose “to burn as much as of its own biomass as possible” is a “valid reason[] for imposing a 10% cap [on natural gas use].” Opinion at 23.

Petitioners explained, but the panel did not address, the logical consequences of validating a dirtier-fuel-as-much-as-possible purpose: EPA’s redefine-the-source policy, which is based on a PSD applicant’s definition of its proposed facility’s purpose (Opinion at 16), will be expanded to directly conflict with Congress’s “clean fuels” mandate. *See* Pet. Opening Br. at 34-38; Pet. Reply Br. at 11-13, 17-19. In 1990, Congress added “clean fuels” to the BACT definition, thus requiring that incorporation of “clean fuels” into a major emission source’s proposed design (or, as here, greater use of “clean fuels” already incorporated into a facility’s design) must be included among the available control technologies

considered as BACT. 42 U.S.C. § 7479(3); *Sierra Club*, 499 F.3d at 655 (“The [Clean Air] Act is explicit that ‘clean fuels’ is one of the control methods that the EPA has to consider.”) But if PSD permit applicants may cap their use of “clean fuels” at a certain percentage simply by avowing a “business purpose” of exclusively using a dirtier fuel (i.e. a “purpose” of burning the dirtier fuel “as much as possible”)—as Sierra Pacific did here—then logically, applicants could intentionally exclude the greater use of available clean fuels from consideration as potential BACT, thereby evading Congress’s “clean fuels” mandate.

Through the panel’s decision, this Court has created an “automatic BACT off ramp” warned of by other EAB decisions and the Seventh Circuit. As EAB previously explained, “the [Clean Air Act] promotes ‘clean fuels’ with particular vigor. *See* CAA § 169(3), 42 U.S.C. § 7479(3). Merely equating use of lower polluting fuels to impermissible redesign in the hope of paving an automatic BACT off-ramp pointedly frustrates congressional will.” *Northern Michigan University Ripley Heating Plant* (“NMU”), 14 E.A.D. 283, 302 (EAB 2009), 2009 WL 443976; *see also* *Desert Rock Energy Center, LLC*, 14 E.A.D. 484, 539, n.82 (EAB 2009) (warning of automatic BACT off-ramp), 2009 WL 5326323; *Sierra Club*, 499 F.3d at 656 (7th Cir. 2007) (warning of reading “clean fuels” out of the Clean Air Act).

This panel failed to explain how a dirtier-fuel-as-much-as-possible purpose could be reconciled with the Clean Air Act’s “clean fuels” mandate. EAB’s *Prairie State* ruling that a PSD applicant’s purpose may be narrower than simply “production of electricity,” cited by the panel, does not address this inherent conflict. *See* Opinion 21 (citing *In Re: Prairie State Generating Station*, 13 E.A.D. 1, 25 (EAB 2006)). The “purpose” examples listed in that decision clarify that EAB was referring to purposes *unrelated to the exclusive use of only one fuel*, such as providing “baseload” as opposed to “peaking” power. *Prairie State*, 13 E.A.D. at 25. Other valid purposes pertained to the proposed facility’s “fundamental” design, such as the purpose of building a coal-fired plant rather than a natural gas-fired plant. *Id.* *Prairie State* never held or implied that capping the use of an available clean fuel already incorporated in a proposed facility—Sierra Pacific’s “purpose” in this case—could be a valid purpose.

Furthermore, in upholding *Prairie State*, the Seventh Circuit explicitly held that if incorporating “co-located” clean fuels requires only “some adjustment” to a facility’s design (as opposed to a changing the “fundamental scope”) then the clean fuel would not “redefine the source.” *Sierra Club*, 499 F.3d at 655-56. The panel acknowledged this as the proper test, but failed to apply it. *See* Opinion at 15 (“In essence, a control alternative redefines the source if it requires a complete redesign of the facility.”) As explained below, incrementally altering Sierra Pacific’s 90%

biomass-10% natural gas fuel mix easily meets this test because all evidence in the record suggests that such a pollution control measure would require only “some adjustment” (if any) to the facility’s design. *See infra* at p. 7-10.

EPA’s GHG Permitting Guidance states that a different combination of available fuels should be considered as BACT, but not if that “would disrupt the applicant’s basic business purpose.” [PER677, cited at Opinion at 23.] The panel erroneously interpreted this passage as deviating from the Seventh Circuit’s “fundamental redesign” test, concluding that only a “disruption”—however minor—to a PSD applicant’s claimed purpose could suffice to trigger the redefine-the source-policy. Opinion at 23. Rather, as the Guidance explained, clean fuel options that would decrease emissions (such as incremental changes to fuel mix) should be considered as BACT unless the option “would *fundamentally* redefine the source. *Such options include those that would require a permit applicant to switch to a primary fuel type (i.e., coal, natural gas, or biomass) other than the type of fuel that an applicant proposes to use for its primary combustion process.*” GHG Permitting Guidance at 27 [PER676] (emphases added).¹

¹ *See also* EPA’s Bioenergy BACT Guidance at 15 [PER626] (“where a permit applicant proposes to co-fire or combine biomass fuels with another primary fuel type, the list of BACT options should include the option of utilizing both types of primary fuels in different combinations,” unless the PSD applicant can demonstrate “a different allocation of primary fuels would fundamentally redefine the proposed source.”).

Petitioners never suggested that Sierra Pacific should consider a primarily-natural-gas-fired power plant instead of a primarily-biomass-fired co-generation facility. Rather, Petitioners suggested that Sierra Pacific consider incrementally different combinations than the permitted 90% biomass-10% natural gas fuel mix as potential BACT—potentially, as little as 89% biomass-11% natural gas. *See* Pet. Opening Br. at 43-44. EAB arbitrarily upheld EPA’s and Sierra Pacific’s omission of this clean fuel option from BACT analyses.

II. The Record Does Not Support a Finding that Incrementally Greater Use of Natural Gas Would Require “Fundamentally” or “Completely” Redesigning Sierra Pacific’s Proposed Facility—the Essence of EPA’s “Redefine the Source” Policy

EPA’s redefine-the-source policy is triggered when incorporating an available control technology (such as a clean fuel) would require a “complete” or “fundamental” redesign—not merely “some adjustment”—of the proposed facility. *See* Opinion at 15; *Sierra Club*, 499 F.3d. at 655-56. In *Sierra Club*, Judge Posner identified various physical and technical design changes that would have been required to incorporate low-sulphur coal into Prairie State’s proposed design as BACT:

to convert the design from that of a mine-mouth plant to one that burned coal obtained from a distance would require that the plant undergo significant modifications--concretely, the half-mile-long conveyor belt, and its interface with the mine and the plant, would be superfluous and instead there would have to be a rail spur and facilities for unloading coal from rail cars and feeding it into the plant.

Sierra Club at 655. The court characterized these extensive design changes as lying on the “borderline” between “fundamental redesign” and merely “some adjustment.” *Id.* at 656.

By contrast, here EAB never identified any technical or physical design changes that might be required to incrementally alter Sierra Pacific’s proposed 90% biomass-10% natural gas fuel mix. In fact, all evidence in the record suggests that natural gas already plays a significant, integral role in the proposed design, and therefore using natural gas above 10% would require only “some adjustment.” For example:

- Natural gas is expected to be burned 500 hours a year. Under the permit’s 10% cap, natural gas may be burned up to 3,000 hours a year. *See* EPA Br. at 56-57.
- The facility includes two 62.5 MMBtu/hour natural gas burners located near the boiler’s steam tubes, AAQIR at 22 [PER490], a 10,000 gallon-capacity natural gas storage tank, PSD permit [PER 197], and will use Public Utilities Commission (PUC)-quality pipeline natural gas, *id.* [PER202, 206].
- The facility’s schematic flow design, which can be indicative of purpose, *Prairie State*, 13 E.A.D. at 21-22, shows that both biomass and natural gas are input directly into the same boiler at approximately the same place. PSD Permit Application, Figure 2-1 [PER786].

Because EAB made no findings or technical determinations about the extent of changes to the proposed facility's physical design that would be required to use natural gas above 10%, its determination that using more natural gas would "refine the source" was arbitrary and capricious², and the panel's deference to EAB's determination was erroneous.

Finally, the panel correctly noted that EPA's redefine-the-source test analysis begins with the PSD permit applicant's definition of its purpose, Opinion at 16, which the panel identified as a power plant "that would burn biomass fuels in a boiler to produce steam that would be used to generate electricity and to heat existing lumber dry kilns at the facility," Opinion at 21.³ Neither EAB or the panel were justified in assuming that incrementally greater use of natural gas would fundamentally impede (or even impede at all⁴) Sierra Pacific's purpose of burning

² See also GHG Permitting Guidance at 27 [PER 676] ("any decision to exclude an option on "redefining the source" grounds must be explained and documented in the permit record, especially where such an option has been identified as significant in public comments.")

³ In fact, before the EPA and EAB, Sierra Pacific defined its purpose as "primarily" burning biomass, see EAB Order at 62, n.36 [PER69], which is why Petitioners noted that "Sierra Pacific arguably can have a basic business purpose of 'primarily' burning a dirtier fuel that is readily available to it." Opinion at 21-22. Notably, EAB unilaterally found that Sierra Pacific has a business purpose of burning biomass "as much as possible," a purpose neither EPA or Sierra Pacific previously had identified. This is another reason EAB's ruling was arbitrary and capricious. See Pet. Opening Br. at 38-42.

⁴ Indeed, unless Sierra Pacific's facility is running at full capacity at all times, then it could increase its use of natural gas while still burning the same amount of biomass.

its own biomass. Furthermore, neither EAB or the panel identified any grounds why greater use of natural gas or a solar component would impede Sierra Pacific's other purposes of "produc[ing] steam that would be used to generate electricity and to heat existing lumber dry kilns at the facility" *Id.*

III. EAB and the Panel Erred by Creating a Vague, New "Incidental Use" Test for EPA's Well-Established Redefine-the-Source Policy

EAB justified its redefine-the-source ruling by noting that Sierra Pacific's "lawful acceptance of a 10% gas cap is incidental to the project's basic design." EAB Order at 64 [PER71]. Based on this finding, the panel held that EAB's redefine-the-source ruling was not arbitrary, capricious, or an abuse of discretion because "[b]urning natural gas is . . . incidental to Sierra Pacific's business purpose of using its on-site source of biomass as fuel for the new facility." Opinion at 23.

The panel did not cite, and Petitioners are unaware of, any other cases, EAB decisions, or EPA guidance interpreting EPA's redefine-the-source policy to include such an "incidental use" test. Therefore, the panel erred by deferring to this novel justification for finding that a control technology would "redefine the source." *See Tex. Dep't of Hous. & Cmty. Affairs v. Inclusive Cmty. Project, Inc.*, 135 S. Ct. 2507, 2542 (2015) (no deference warranted "when there is reason to suspect that the agency's interpretation 'does not reflect the agency's fair and considered judgment on the matter in question,'" quoting *Christopher v. SmithKline Beecham Corp.*, 132 S. Ct. 2156, 2167 (2012)).

The panel's new standard for whether an available control technology "redefines the source" conflicts with EPA's and the Seventh Circuit's "fundamental redesign" test. Under the "incidental use" test, even if a co-located clean fuel already is used in a proposed facility's design, and even if greater use of that clean fuel would require only "some adjustment," greater use of the clean fuel still may be excluded from BACT consideration if the proposed use of the clean fuel is only "incidental" to a PSD applicant's basic business purpose. This holding cannot be reconciled with the Seventh Circuit's holding that the difference between using a clean fuel and using a dirty fuel "is a difference in control technology" not a difference in design, and simply burning some or more of a cleaner fuel does not constitute redesign. *Sierra Club*, 499 F.3d at 657.

Furthermore, this new "incidental use" test is vague and confusing. Is an available clean fuel "incidental" if used only as backup fuel, but not in the proposed facility's startup and shutdown processes? Is the use still "incidental" if capped at 15% (as opposed to 10%)? The test will be difficult to implement.⁵

The panel erroneously found that burning biomass only (but not natural gas) is "inherent" to the Facility's design because, "[i]n the PSD permit issued by EPA, the project description stated that fuel for the power plant would be generated on-

⁵ Cf. GHG Permitting Guidance at 28 [PER677] ("when a permit applicant has incorporated a particular fuel *into one aspect of the project design (such as startup or auxiliary applications)*, this suggests that a fuel is 'available' to a permit applicant" (emphasis added)).

site or received from other local sources to produce steam in the new facility.”

Opinion at 21. In fact, the first sentence of the permit’s “Project Description” section states: “Sierra Pacific Industries, Inc. (SPI) applied for the approval to construct and operate a new stoker boiler capable generating MW gross electrical output *from the combustion biomass and natural gas*, and related auxiliary equipment.” [PER196, (emphasis added).] As Sierra Pacific explained, “burning natural gas . . . is inherent in the project” because it is “burned alongside the biomass fuel,” Sierra Pacific’s Br. at 57, 58. Thus both biomass and natural gas qualify as inherent (and not “incidental”) to the Facility’s design.

The panel erroneously found that “Sierra Pacific does not propose to use natural gas as a ‘secondary’ or backup fuel source but only for strictly limited purposes.” Opinion at 23. The permitted facility includes a natural gas-fired emergency unit, with its own emission limits, to be used for “emergency operations.” PSD Permit [PER197, 204, 206]. Furthermore, according to Sierra Pacific, “natural gas is important to stabilizing the burn, to preclude excessive carbon-monoxide emissions. For example, after a large amount of rainfall, there may be a pocket of wet fuel in the boiler, which could cause the flame to become unstable and cause carbon-monoxide emissions to rise. AER930. . . . The ability to burn natural gas during this period allows Sierra Pacific to stay within its permit

limit for carbon monoxide, until the boiler can return to normal operation.

AER930.” Sierra Pacific Br. at 58. These uses are secondary and backup uses.

Sierra Pacific’s “expectation” that it will burn natural gas less than 10% does not make the use of natural gas any less inherent to the proposed facility. *See* Opinion at 23. EPA admitted that when natural gas is used, it is “necessary for proper operation” of the facility. EPA Br. at 65.

IV. EAB Arbitrarily Dismissed a Solar Component as Potential BACT, and the Panel Misunderstood What Is a Solar Component

As with the biomass-natural gas fuel mix, EAB failed to make any findings whether incorporating a solar component into the proposed facility would require physical or technical adjustments amounting to a “complete redesign of the facility.” Opinion at 15; *see supra*, p. 9. Therefore, EAB’s redefine-the-source determination regarding solar energy also was arbitrary and capricious.

Furthermore, the panel misunderstood the nature of a potential solar component BACT, and why solar should have been included in Step 1 of the Facility’s BACT analyses. The panel held that “[r]equiring a solar component just because it is a cleaner fuel than biomass is the same as requiring Sierra Pacific to

consider the nuclear option.” Opinion at 22. First, petitioners never asked EPA to “require” a solar component, but rather to include it in EPA’s top-down analyses.⁶

Second, the panel erred by assuming that a solar component would require redesign of Sierra Pacific’s proposed primarily-biomass-powered facility. Solar energy panels can be mounted on rooftops.⁷ Therefore, a “solar component” could be as simple as adding solar panels to the roof of the existing design of Sierra Pacific’s proposed facility. *See* PER792, PSD Permit Application, Figure 4-3 (showing numerous buildings in close proximity to new boiler). The Opinion offers no explanation why adding rooftop solar panels would require a “fundamental redesign” analogous to changing a biomass facility into a nuclear one. The comparison is inapt.

Third, a solar component should not be included in Step 1 “just because it is a cleaner fuel,” Opinion at 22, but rather because Congress requires major emission sources to obtain PSD permits that will maintain air quality—to the

⁶ *See* Opinion at 8 (“Step 1 list is meant to be comprehensive and conclude all option applicable to the particular pollutant even though the option may be eliminated in later steps”).

⁷ *See Energy Conversion Devices Liquidation Tr. v. Trina Solar Ltd.*, No. 15-2130, 2016 U.S. App. LEXIS 15173, at *2 (6th Cir. Aug. 18, 2016) (“businesses and homeowners sometimes install solar [photovoltaic] panels on their roofs.”); EPA Website, “Solar Heating and Cooling Technologies,” available at <https://www.epa.gov/rhc/solar-heating-and-cooling-technologies> (solar thermal installed on rooftops).

“maximum degree of [emissions] reduction,” 42 U.S.C. § 7479(3)—for citizens who live nearby the sources. Opinion at 7.

Finally, the panel erred by holding that “Sierra Pacific and EPA are not required to take on the ‘Sisyphean’ task of considering every possible clean fuel alternative.” Opinion at 22 (citing *Sierra Club*, 499 F.3d at 655). Petitioners did not ask EPA to consider every possible clean fuel alternative. And the generalized concern that all or too many clean fuels may have to be considered as potential BACT for each PSD permit underestimates EPA’s established techniques for identifying BACT, and also overlooks the fact that Congress required, as a condition for obtaining a PSD permit, selection of the “best” available control technology. EPA has risen to the challenge of identifying BACT for each regulated pollutant by developing and implementing its five-step top-down BACT selection process. *See generally*, NSR Manal, Chapter B; Opinion at 8. To assist in the process, EPA also has created a national database for identifying demonstrated control technologies.⁸

While identifying the “best” available control technology is a demanding, exacting task, it is required by law to obtain a PSD permit. 42 USC 7475(a)(4); 42 USC 7479(3). The task may seem “Sisyphean” at times, but it is critical that EPA

⁸ *See* RACT/BACT/LAER Clearinghouse, available at <https://cfpub.epa.gov/rblc/>.

executes it thoroughly and properly. No less is at stake than the cleanliness of the air we breathe.

CONCLUSION

For the foregoing reasons, Petitioners respectfully request rehearing—either by the panel or *en banc*.

Dated: October 17, 2016

Respectfully submitted,

/s/ Andrew S. Kingsdale
ANDREW S. KINGSDALE

Attorney for Petitioners
Helping Hand Tools and Robert Simpson

CERTIFICATE OF COMPLIANCE

I certify that pursuant to Federal Rule of Appellate Procedure 40(b) and Ninth Circuit Rules 35-4 and 40-1(a), the foregoing opening brief is proportionately spaced, has a typeface of 14 points, and contains 3,602 words, excluding the parts of the brief exempted by Federal Rule of Appellate Procedure 32(a)(7)(B)(iii).

Dated: October 17, 2016

/s/ Andrew S. Kingsdale
ANDREW S. KINGSDALE

Attorney for Petitioners
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CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing PETITION FOR PANEL REHEARING AND REHEARING *EN BANC* OF PETITIONERS HELPING HAND TOOLS AND ROBERT SIMPSON with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit by using the appellate CM/ECF system on October 17, 2016.

I certify that all participants in the case are registered CM/ECF users and that service will be accomplished by the appellate CM/ECF system.

Dated: October 17, 2016

/s/ Andrew S. Kingsdale
ANDREW S. KINGSDALE

APPENDIX A

Helping Hand Tools, et al. v. U.S. Environmental Protection Agency, ---F.3d--- (9th Cir. Sept. 2, 2016) (slip op.)

FOR PUBLICATION

**UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT**

HELPING HAND TOOLS; ROB
SIMPSON,

Petitioners,

v.

U.S. ENVIRONMENTAL PROTECTION
AGENCY; GINA MCCARTHY, in her
capacity as Administrator of the U.S.
Environmental Protection Agency;
DEBORAH JORDAN, in her capacity as
Director of the Air Division of U.S.
Environmental Protection Agency
Region IX,

Respondents,

SIERRA PACIFIC INDUSTRIES, INC.,
Respondent-Intervenor.

No. 14-72553

CENTER FOR BIOLOGICAL
DIVERSITY,

Petitioner,

v.

U.S. ENVIRONMENTAL PROTECTION
AGENCY; GINA MCCARTHY, in her
official capacity as Administrator of
the United States Environmental
Protection Agency; JARED
BLUMENFELD, in his official capacity
as Regional Administrator of Region
9 of the United States Environmental
Protection Agency; DEBORAH
JORDAN, in her official capacity as
Director of the Air Division of
Region 9 of the United States
Environmental Protection Agency,

Respondents,

SIERRA PACIFIC INDUSTRIES, INC.,
Respondent-Intervenor.

No. 14-72602

EPA No.
EPA-R09-OAR-
2012-0634

OPINION

On Petitions for Review of an Order of the
United States Environmental Protection Agency

Argued and Submitted July 19, 2016
San Francisco, California

Filed September 2, 2016

HELPING HAND TOOLS V. USEPA

3

Before: Susan P. Graber and Richard C. Tallman, Circuit Judges, and Nancy G. Edmunds,* Senior District Judge.

Opinion by Judge Tallman

SUMMARY**

Environmental Law

The panel denied a petition for review of a decision of the United States Environmental Protection Agency granting Sierra Pacific Industries, Inc. a prevention of significant deterioration permit for construction of a new biomass-burning power plant at its lumber mill in California.

The panel held that the EPA did not act arbitrarily or capriciously in granting a prevention of significant deterioration permit to Sierra Pacific.

Addressing petitioner Helping Hands Tools' claims that the EPA was required to consider solar power and a greater natural gas mix as clean fuel control technologies in the best available control technology ("BACT") analysis for pollutants subject to Clean Air Act regulation, the panel held that because the EPA properly took the requisite hard look at Sierra Pacific's proposed design and the key purpose of

* The Honorable Nancy G. Edmunds, Senior United States District Judge for the Eastern District of Michigan, sitting by designation.

** This summary constitutes no part of the opinion of the court. It has been prepared by court staff for the convenience of the reader.

burning its own biomass waste, the EPA reasonably concluded that consideration of solar or increased natural gas would disrupt that purpose and redefine the source.

Addressing petitioner Center for Biological Diversity's claims raised in response to the supplemental greenhouse gas BACT analysis, the panel deferred to the agency's determination because EPA was largely relying on its own guidance, acting at the frontiers of science.

COUNSEL

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OPINION

TALLMAN, Circuit Judge:

Helping Hand Tools (“Helping Hand”) and Center for Biological Diversity (“Center”) petition for review of a final decision of the United States Environmental Protection Agency (“EPA”) granting Sierra Pacific Industries (“Sierra Pacific”) a prevention of significant deterioration (“PSD”) permit for construction of a new biomass-burning power plant at its lumber mill in California. Plaintiffs contend that EPA issued the PSD permit in violation of the Clean Air Act, 42 U.S.C. §§ 7401–7671q. This is the first time we have reviewed EPA’s doctrine of “redefining the source.” It also appears to be the first time that EPA’s framework for evaluating the best available control technology for greenhouse gas emissions from facilities burning biomass fuels is considered by any circuit in the United States. We hold that EPA did not act arbitrarily or capriciously in granting a PSD permit to Sierra Pacific pursuant to that framework.

I

Sierra Pacific owns and operates a lumber manufacturing facility in Anderson, California, situated at the northern end of the Central Valley in Shasta County. On March 29, 2010, Sierra Pacific filed an application for a PSD permit with EPA

in order to construct a new cogeneration¹ unit at its mill. The new unit was designed to burn biomass fuels² in a boiler to produce steam used to turn turbine blades to generate 31 megawatts of electricity and to heat existing lumber dry kilns. Fuel for the unit would come primarily from wood wastes from Sierra Pacific's own lumber mills, as well as other readily available sources of agricultural and urban wood wastes. The new boiler replaces a smaller existing boiler at the Anderson Facility. The smaller boiler could burn only 60,000 bone-dry tons ("BDT")³ of the 160,000 BDT of wood waste the Anderson Facility annually produces. The new boiler has the increased capacity to burn up to 219,000 BDT of wood waste. Additionally, the boiler will utilize natural gas for the limited purpose of startup, shutdown, and flame stabilization.⁴

¹ Cogeneration units produce both electrical power and heat. *See, e.g., In re N. Mich. Univ. Ripley Heating Plant*, 14 E.A.D. 283, 285 (E.A.B. 2009).

² Used interchangeably with the terms "bioenergy" and "biogenic," biomass fuels include wood waste such as chips and bark from sawmill operations, forest residue, agricultural residue, crops, grasses, standing trees, and waste from landfills or water treatment. 76 Fed. Reg. 43,490-01, 43,493 (July 20, 2011).

³ A BDT is 2,000 pounds of wood pulp with a zero percent moisture content.

⁴ Flame stabilization is necessary when optimal operations of the boiler are upset by fuel variability, such as from burning wet wood waste fuel. At these times, the optimal combustion of the wood waste is not occurring and natural gas is used to stabilize combustion and to maximize efficiency by returning the boiler to desired high temperature operations.

To understand the process by which Sierra Pacific sought approval by EPA to build the new boiler and the resulting litigation that ensued first requires an examination of the statutory and regulatory framework underlying the permitting process and then an examination of how EPA employed that process with Sierra Pacific's particular permit application.

A

The Clean Air Act establishes a comprehensive program for controlling and improving air quality. As part of this program, 42 U.S.C. §§ 7470–7479 require new and modified major emitting facilities, like Sierra Pacific's new boiler, to seek a PSD permit prior to construction. *Id.* § 7475(a). These permits are required in geographical regions designated to meet particular national ambient air quality standards. *Id.* § 7471. Critically, in order to obtain a PSD permit, the applicant must demonstrate that the proposed facility utilizes the best available control technology ("BACT") for every pollutant subject to regulation by the Clean Air Act. *Id.* § 7475(a)(4). BACT is defined as

an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation . . . from any major emitting facility, which [EPA], on a case-by-case basis, . . . determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant.

Id. § 7479(3). In every case-by-case analysis, EPA will consider “energy, environmental, and economic impacts and other costs.” *Id.*

In 1990, in the absence of any clear guidance from Congress on how to evaluate BACT for a particular pollutant, EPA developed a five-step, “top-down” approach. *See* Environmental Protection Agency, New Source Review Workshop Manual, Chapter B (1990) (hereinafter “NSR Manual”). PSD permit applicants must engage in this analysis for every regulated pollutant with a significant emissions increase. *Id.* at B.4.

Briefly, the top-down analysis begins at Step 1 when the applicant lists all available control technologies. *Id.* at B.5. Control technologies are those technologies that have “a practical potential for application to the emissions unit and the regulated pollutant under evaluation.” *Id.* This list is meant to be comprehensive and include all options applicable to the particular pollutant even though the option may be eliminated in later steps. *Id.* at B.5–7. At Step 2, the applicant eliminates any technically infeasible options and must clearly document why the particular control option cannot be used. *Id.* at B.7. At Step 3, the applicant ranks the remaining control options against each other in order of overall effectiveness. *Id.* at B.7–8. Then, based on this ranking, at Step 4, the applicant evaluates each control option to consider the energy, environmental, and economic impacts. *Id.* at B.8. If the top candidate is unfavorable for any of these reasons then the applicant evaluates the impacts of the next available control option. *Id.* at B.8–9. The most effective control option that is not eliminated at Step 4 is then chosen as BACT at step 5. *Id.* at B.9.

EPA supplemented the top-down approach as it applied to greenhouse gases⁵ in March 2011 when it issued new guidance.⁶ See Environmental Protection Agency, PSD and Title V Permitting Guidance for Greenhouse Gases (2011) (hereinafter “GHG Permitting Guidance”). At the same time, EPA issued more specific BACT guidance for carbon dioxide emissions from facilities that use biomass as a primary fuel source. See Environmental Protection Agency, Guidance for Determining Best Available Control Technology for Reducing Carbon Dioxide Emissions from Bioenergy Production (2011) (hereinafter “Bioenergy BACT Guidance”). The Bioenergy BACT Guidance describes how each step of the five-step BACT analysis should be approached when a facility proposes to use mostly biomass as a fuel. *Id.* at 10–11. It does not supersede prior guidance, *id.* at 4, and agencies must still consider each PSD application on a case-by-case basis, *id.* at 5.

EPA promulgated a more particular BACT framework because carbon dioxide emissions from biomass fuels participate in the carbon cycle differently than other fuels, and biomass fuel stocks replenish more quickly than fossil

⁵ “Greenhouse gases” are considered a single pollutant comprised of the aggregate of carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

⁶ Though the extent to which EPA can require particular facilities to comply with BACT requirements for greenhouse gases has been heavily litigated, the Supreme Court recently held that “EPA’s decision to require BACT for greenhouse gases emitted by sources otherwise subject to PSD review is” permissible. *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2448 (2014). The cogeneration power plant proposed by Sierra Pacific is such a facility and neither party disputes EPA’s authority to regulate greenhouse gas emissions from that facility.

fuel stocks. *Id.* at 6. Trees are a classic example of this phenomenon in nature. The short regenerative time means that new growing plant matter, biomass carbon stocks, can absorb excess carbon dioxide from the atmosphere more quickly than fossil fuel carbon stocks. *Id.* Additionally, photosynthesis from a well-managed biomass carbon stock, such as a well-managed forest, can act as a carbon sink, thereby decreasing the net carbon dioxide released from burning biomass as fuels. *Id.* “Biogenic [carbon dioxide] emissions are distinct from other regulated pollutants at bioenergy facilities because, unlike other pollutants and other [greenhouse gases], [carbon dioxide] emissions can participate directly in the global carbon cycle through photosynthesis.” *Id.* at 7. Therefore, EPA modified the steps of the traditional BACT analysis in particular ways to account for the unique properties of biomass.

Of particular relevance, at Step 1, EPA notes that “it will be important to address the extent to which the BACT analysis for [greenhouse gases] should include” an evaluation of other fuel types. *Id.* at 15. However, if utilization of biomass is the primary purpose of the project, then the agency can rely on that purpose to determine that another fuel would redefine the project. *Id.* If a facility relies primarily on biomass as fuel, the options at Step 1 “may be limited to (1) utilization of biomass fuel alone, (2) energy efficiency improvements, and (3) carbon capture and sequestration.” *Id.*

Skipping to Step 4,⁷ the Bioenergy BACT Guidance notes that the traditional Step 4 analysis is “an environmental, economic, and energy impacts analysis that includes both

⁷ Steps 2 and 3 are conducted in the same manner as promulgated in the NSR Manual. Bioenergy BACT Guidance at 16–17.

direct and indirect (*i.e.*, collateral) considerations.” *Id.* at 18. EPA emphasizes that indirect environmental impacts and benefits are better suited to analysis in Step 4, *id.* at 21, and burning different biomass fuel stocks will not have a differential impact on emissions at the facility but at the forest or region where the biomass fuel is taken, *id.* at 22.⁸

In holding that facilities like Sierra Pacific’s were subject to PSD permit requirements for greenhouse gas emissions, the Supreme Court expressly refrained from deciding whether to approve or endorse EPA’s current approach for determining BACT for greenhouse gases. *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2449 (2014). To our knowledge, no other court has evaluated EPA’s approach. We examine it here as it was used to grant Sierra Pacific its PSD permit.

⁸ To illustrate the point, burning a dead tree that has fallen in the forest, instead of a live tree, will have a different impact on the environment. Burning the dead tree releases the same amount of carbon dioxide into the atmosphere that would be released anyway as the tree decomposed. But the emissions occur faster and at the facility, not in the forest. Burning the live tree, which uses carbon dioxide for photosynthesis, removes a carbon dioxide absorbing source from the forest and also releases carbon dioxide emissions at the facility. The facility emits carbon dioxide in either case but the environmental impact at the forest—the benefit of removing a carbon dioxide emitting decomposing tree or the harm in removing a carbon dioxide absorbing live one—are an indirect result of burning biomass fuel at the facility. However, a comparison of different biomass fuel stocks, such as comparing the effects of burning mill waste to the effects of burning a dead tree, is a much more technical endeavor that EPA is actively trying to calculate at present. Bioenergy BACT Guidance at 23. The problem, according to the agency, is the current inability of the available science to quantify the tradeoff. *Id.* Where the agency is acting on the frontiers of developing science, our deference is at its highest level. *Baltimore Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 103 (1983).

B

EPA’s consideration of Sierra Pacific’s permit application took place in two phases. During the first phase in September 2012, EPA proposed to issue a PSD permit to Sierra Pacific that required the use of add-on control technologies and inherently lower-emitting controls as BACT for the pollutants analyzed. EPA did not consider BACT for greenhouse gases because it was not then required.⁹ EPA accepted Sierra Pacific’s cap on natural gas use of no more than 10% of the total fuel required, because it was to be used only for limited purposes during startup, shutdown, and flame stabilization.

After public comment, EPA issued the PSD permit, and Helping Hand petitioned the Environmental Appeals Board (“the Board”) for review. On July 18, 2013, the Board remanded the PSD permit to EPA for further proceedings on a single ground—that EPA had abused its discretion in not holding a public hearing. The Board held that EPA did not abuse its discretion in approving the permit on all other issues, two of which are relevant to the current petition before us.

First, the Board held that EPA did not abuse its discretion by declining to consider the inclusion of solar power as a fuel source or a greater percentage of natural gas because it would impermissibly redefine the source. In making this determination, the Board reviewed the administrative record

⁹ At the time, EPA had issued a rule deferring regulation of biogenic carbon sources in order to examine the science behind biogenic carbon dioxide emissions from stationary sources like power plants. *See Ctr. for Biological Diversity v. EPA*, 722 F.3d 401, 407 (D.C. Cir. 2013). The District of Columbia Circuit later vacated this rule. *Id.* at 412.

and determined that the primary purpose of the project was to allow Sierra Pacific “to put to use the hundreds of thousands of bone-dry tons of wood waste the company has in the Shasta County region, for the production of lumber and electricity.” The Board then held that “requiring [Sierra Pacific] to burn fewer tons of wood waste so that it could generate solar power or burn more natural gas instead would plainly disrupt the project’s ‘basic business purpose’ of using as much surplus biomass as possible” to get rid of the byproduct and to generate steam to dry lumber in kilns and produce electricity for use on site and for sale to the electrical grid.

Second, the Board held that EPA did not abuse its discretion in limiting the mix of fuel to 90% biomass and 10% natural gas. The Board held that Sierra Pacific’s prudent use of natural gas for startup, shutdown, and flame stabilization was a valid reason to limit the quantity of natural gas used and “not evidence of a project design ‘derived for reasons of air quality permitting.’”

The second phase of consideration occurred when, just a few days before the Board’s decision, the District of Columbia Circuit vacated EPA’s rule deferring BACT determinations for greenhouse gases emitted from facilities like Sierra Pacific’s boiler. *See Ctr. for Biological Diversity v. EPA*, 722 F.3d 401, 412 (D.C. Cir. 2013). As a result, EPA conducted a supplemental BACT analysis on Sierra Pacific’s new biomass facility. EPA considered public comments on the supplemental analysis, and the Center contended that EPA could not consider the burning of biomass fuel alone as a control option at Step 1 and should have directly compared the environmental impacts of different biomass fuel stocks at Step 1.

EPA nonetheless issued a final PSD permit notice on April 25, 2014. The Center appealed to the Board and the Board dismissed for lack of jurisdiction because, in its July 2013 decision, the Board specifically stated that, pursuant to 40 C.F.R. § 124.19(l)(2)(iii), it would not require or accept an appeal after the remand. Helping Hand and the Center then filed the petitions for review now before us. Because all available administrative remedies have been exhausted, we have jurisdiction under 42 U.S.C. § 7607(b)(1).¹⁰

II

EPA’s decision is reviewed under the Administrative Procedure Act and may be set aside only if it is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.” 5 U.S.C. § 706(2)(A); *see Alaska Dep’t of Env’tl. Conservation v. EPA*, 540 U.S. 461, 496–97 (2004). EPA must “articulate[] a rational connection between the facts found and the choice made.” *Sierra Club v. EPA*, 346 F.3d 955, 961 (9th Cir. 2003) (alteration in original) (quoting *Ariz. Cattle Growers’ Ass’n v. U.S. Fish & Wildlife*, 273 F.3d 1229, 1236 (9th Cir. 2001)).

¹⁰ Though not disputed by EPA, because this is the first time the case is before an Article III court, Helping Hand and the Center must establish standing. *See Sierra Club v. EPA*, 762 F.3d 971, 976 (9th Cir. 2014). We are satisfied that, through the declarations of its members, both Helping Hand and the Center have associational standing to bring the current petition. *See id.* at 976–78 (discussing that “[a]n association has standing to bring suit on behalf of its members when its members would otherwise have standing to sue in their own right” and further discussing the factors demonstrating that the individual members had standing to pursue Clean Air Act claims (internal quotation marks omitted)).

“[W]e do not simply review whether it was arbitrary or capricious” for the Board to reject a petitioner’s claims that EPA clearly erred. *Citizens for Clean Air v. EPA*, 959 F.2d 839, 845–46 (9th Cir. 1992). “Rather, we conduct a deferential review of the entire agency action,” including whether approval of the PSD permit is based on a clearly erroneous finding of fact or conclusion of law. *Id.* at 846.

III

First, we address the claims raised by Helping Hand that EPA was required to consider solar power and a greater natural gas mix as clean fuel control technologies in the BACT analysis. This is an issue of first impression in our circuit, but our opinion is guided by well-reasoned decisions of the Board and the Seventh Circuit. Because EPA properly took the requisite hard look at Sierra Pacific’s proposed design and the key purpose of burning its own biomass waste, we hold that EPA reasonably concluded that consideration of solar or increased natural gas would disrupt that purpose and redefine the source.

A

Though failure to consider all available control alternatives in a BACT analysis constitutes clear error, EPA does not have to consider control alternatives that would “redefine the source.” *See, e.g., In re Desert Rock Energy Co.*, 14 E.A.D. 484, 526 (E.A.B. 2009); *see also* NSR Manual at B.13. In essence, a control alternative redefines the source if it requires a complete redesign of the facility. In a classic and simple example, a coal-burning power plant need not consider a nuclear fuel option as a “cleaner” fuel because it would require a complete redesign of the coal-burning power-

plant. *See Sierra Club v. EPA*, 499 F.3d 653, 655 (7th Cir. 2007). Considering control technologies is rarely so simple, however, and EPA engages in a two-step process to determine whether a control technology will redefine the source.

First, “the permit applicant initiates the process and . . . defines the proposed facility’s end, object, aim or purpose—that is the facility’s basic design.” *In re Prairie State Generating Co.*, 13 E.A.D. 1, 22 (E.A.B. 2006), *aff’d sub nom Sierra Club*, 499 F.3d 653; *accord Desert Rock*, 14 E.A.D. at 530; *In re N. Mich. Univ. Ripley Heating Plant*, 14 E.A.D. 283, 301–02 (E.A.B. 2009) (hereinafter “NMU”). The purpose must be “objectively discernable.” *Prairie State*, 13 E.A.D. at 22. Additionally, the applicant’s proposed definition “must be for reasons independent of air permitting” and cannot be motivated by cost savings or avoidance of risks. *Id.* at 23 n.23; *see also Desert Rock*, 14 E.A.D. at 530; *NMU*, 14 E.A.D. at 302 n.28.

Second, EPA takes a “hard look” at the proposed definition to determine which design elements are inherent to the applicant’s purpose and which elements can be changed to reduce pollutant emissions without disrupting the applicant’s basic business purpose. *Desert Rock*, 14 E.A.D. at 530 (remanding a permit back to the agency because it failed to take a “hard look” when the agency determined a particular technology would redefine the source even though the applicant had considered the technology in its application); *see also Prairie State*, 13 E.A.D. at 25–26; *NMU*, 14 E.A.D. at 302. This determination and “[r]efining [of] the statutory definition of ‘control technology’ . . . to exclude redesign is the kind of judgement by an administrative agency to which a reviewing court should

defer.” *Sierra Club*, 499 F.3d at 655. Our examination of this two-step process for Sierra Pacific’s PSD permit is guided significantly by the reasoning of our sister circuit in *Sierra Club* in which it denied the petition arising from *Prairie State*.

When a fuel source is co-located with a facility, EPA need not consider in the BACT analysis fuel sources that are not readily available, because it would redefine the source. *Prairie State*, 13 E.A.D. at 28. There, *Prairie State* Generating Company filed an application for a PSD permit with EPA to build a coal-burning electrical plant in southern Illinois. *Id.* at 4–5. The proposed facility was a “mine-mouth” plant in which the plant is located at the site of the coal mine which fuels it. *Id.* at 16. However, the mine only produced high-sulfur coal which emits more sulfur dioxide pollution than low-sulfur coal from other outlying mines. *Id.* at 15. EPA did not list low-sulfur coal as a control technology in Step 1 of the BACT analysis, however, because low-sulfur coal would have to be shipped in by rail from long distances. *Id.* EPA explained that “it would be inconsistent with the scope of the project to use coal from other regions of the country.” *Id.* at 16.

In making this determination, EPA noted that “the project that must be addressed when evaluating BACT is the project for which an application has been submitted.” *Id.* In this instance, the construction of a “mine-mouth” plant. *Id.* EPA found that “use of a particular coal supply is an inherent aspect of the proposed project.” *Id.* EPA broadly considered alternative coal supplies but rejected a more detailed analysis because it was beyond the scope of the project. *Id.* at 18.

The ultimate dispute before the Board lay in determining how to define the basic purpose of the project and whether Prairie State could include use of coal from a particular source as part of that purpose. *Id.* at 21–22. “The permit issuer must be mindful that BACT, in most cases, should not be applied to regulate the applicant’s objective or purpose for the proposed facility.” *Id.* at 23. The Board specifically rejected petitioners’ assertion that the facility’s business purpose must be viewed broadly as the production of electricity from coal because “we have frequently recognized that an electric generating facility’s purpose may be more narrowly defined.” *Id.* at 25. The Board held that, in defining the scope of a project, EPA could consider if a particular fuel source was an inherent part of the project design. *See id.* (“It has also been long-standing EPA policy that certain fuel choices are integral to the electric power generating station’s basic design.” (citing NSR Manual at B.13)).

Additionally, the Board rejected the petitioners’ argument that a purpose that includes a particular fuel source “would allow a permit applicant to avoid all BACT review by including its preferred fuel . . . and hide behind the claim that requiring anything different would unlawfully ‘redefine’ the proposed source.” *Id.* at 27. Because Prairie State could narrowly define its purpose as burning a particular fuel source, EPA needed only to review the facility proposed, and that meant reviewing a facility that burned co-localized high-sulfur coal. The Board examined EPA’s review of the proposed facility and was satisfied that EPA had taken a hard look at whether further emissions reductions were possible. *Id.* Therefore, the Board concluded, EPA did not err when it “determined that consideration of low-sulfur coal, because it necessarily involves a fuel source other than the co-located

mine, would require Prairie State to redefine the fundamental purpose or basic design of its proposed Facility” and, as a result, EPA properly rejected low-sulfur fuel from Step 1 of the BACT analysis. *Id.* at 28.

In denying the petition arising out of *Prairie State*, the Seventh Circuit noted that the Board and EPA were struggling to draw the line between where “control technology ends and redesign of the ‘proposed facility’ begins.” *Sierra Club*, 499 F.3d at 655. The court noted that if EPA had to consider all clean fuels, it would be required to consider a nuclear plant rather than a coal-fired one, and it was clearly not required to do that. *See id.* (“That approach would invite a litigation strategy that would make seeking a permit for a new power plant a Sisyphean labor, for there would always be one more option to consider.”). Because it was not as clear cut, the Seventh Circuit characterized its case as lying on the borderline between control technology and redesign. *Id.* at 656.

That borderline, defining the distinction between considering alternative fuels to be control technologies or to redefine the facility, is a product of EPA’s framework for evaluating BACT. The Seventh Circuit therefore held that “it makes sense to let the EPA, the author of the underlying distinction, draw it, within reason.” *Id.* at 655. In the facility proposed in *Sierra Club*, the court noted that, in isolation, the difference between low-sulfur and high-sulfur coal as a fuel source is a difference in control technology. *Id.* at 657. But “the difference between a plant co-located with a coal mine and a plant that obtains its coal from afar” is a difference in design. *Id.* Therefore, the Seventh Circuit upheld the BACT determination because EPA reasonably drew the line between control technology and redefining the source. *Id.*

The reasoning of *Prairie State* and *Sierra Club* has been applied to subsequent cases from the Board. In *NMU*, relating to the construction of a power plant on a college campus, the Board remanded a PSD permit back to the agency when it rejected the assertion that considering a different proportion of a coal and wood fuel mix would impermissibly redefine the source. 14 E.A.D. at 301–03. Particularly, the Board noted that NMU locked onto a particular fuel combination without any logic or data to justify the choice. *Id.* at 303; *see also id.* at 297 (“[A]lthough the record reflects that other coal . . . will produce the lowest sulfur emissions, [the agency] proceeds without explaining why these sources are unavailable or not technologically feasible.”). Notably relevant to the current appeal, NMU did not fully analyze the possibility of natural gas as a fuel source when the permit application stated that it would be used for boiler startup and as a backup fuel source. *Id.* at 297 n.17; *see also In re Cash Creek Generation LLC*, 2009 WL 7513857 (E.P.A. 2009) (remanding the permit to the applicant because the record was insufficient to justify a determination that an exclusive use of natural gas, a secondary fuel for the project, would impermissibly redefine the source).

B

Adopting the two-step analysis promulgated by the Board and approved by the Seventh Circuit, we must now determine whether EPA erred in determining that using solar power or a greater natural gas mix in Sierra Pacific’s proposed facility would impermissibly redefine the source.

First, we look at how Sierra Pacific itself defined its facility. In its application description, Sierra Pacific

explicitly stated that it intended to build a power plant “that would burn biomass fuels in a boiler to produce steam that would be used to generate electricity and to heat existing lumber dry kilns at the facility.” Sierra Pacific then went on to define more particularly that its biomass fuel source would come from the existing Sierra Pacific mills, in-forest materials from timberlands owned by Sierra Pacific, and other readily available sources of agricultural and urban wood wastes. Sierra Pacific would use natural gas only for the limited purposes of startup, shutdown, and flame stabilization. Capped at 10%, Sierra Pacific estimated its annual usage of natural gas to be significantly below that limit.

Next, we must determine if EPA took the appropriate “hard look” at how Sierra Pacific defined the facility and whether EPA appropriately determined that the burning of biomass was an inherent element of the facility or whether it could be changed to reduce emissions. In the PSD permit issued by EPA, the project description stated that fuel for the power plant would be generated on-site or received from other local sources to produce steam in the new facility. The steam was then to be used to dry lumber and to power a steam turbine to generate electricity for use onsite or for sale to the northern California power grid.

Helping Hand argues that the Board improperly deferred to Sierra Pacific’s purpose of “burning biomass ‘as much as possible’” and read “clean fuels” out of the Clean Air Act. Sierra Pacific’s purpose, according to Helping Hand, is only to generate steam for lumber drying kilns and to make electricity. However, Sierra Pacific’s purpose need not be so limited, *see Prairie State*, 13 E.A.D. at 25, and Helping Hand concedes that “Sierra Pacific arguably can have a basic

business purpose of ‘primarily’ burning a dirtier fuel that is readily available to it.” Just as the Prairie State facility was co-located with its fuel source, a high-sulfur coal mine, Sierra Pacific’s facility is co-located with its fuel source, waste from its lumber manufacturing operations. Therefore, EPA took a “hard look” at the record and how Sierra Pacific defined its facility and reasonably determined that use of a co-located fuel source was an inherent part of the facility’s design.

Having determined that biomass fuel was an inherent part of the design, we finally examine whether the two proposed alternative clean fuels were control alternatives that should have been considered or would impermissibly redefine the source; keeping in mind the deference EPA must be afforded in making such a determination. Like the petitioners in *Sierra Club*, Helping Hand essentially argues that “if a plant is capable—with redesign—of burning a clean fuel, it must undergo a ‘best available control technology’ analysis.” 499 F.3d at 656. Requiring a solar component just because it is a cleaner fuel than biomass is the same as requiring Sierra Pacific to consider the nuclear option. *See id.* Sierra Pacific and EPA are not required to take on the “Sisyphean” task of considering every possible clean fuel alternative. *See id.* at 655. Therefore, EPA properly dismissed solar as a control technology.

The Board noted, correctly, that consideration of a greater natural gas mix was a closer question. Sierra Pacific’s proposed project falls on the borderline discussed in *Sierra Club*. However, unlike the applicant in *Sierra Club*, Sierra Pacific is not considering two fuel sources as control options: one an off-site “clean” fuel, one an on-site “dirty” fuel. In this instance, Sierra Pacific has access to two on-site fuel sources: “clean” natural gas and “dirty” biomass. Though

this typically would suggest that Sierra Pacific must consider a greater mix of natural gas, even when an alternative fuel is available, it need not be considered at Step 1 if it disrupts the business purpose. GHG Permitting Guidance at 28 (“[G]reater utilization of a fuel that the applicant is already proposing to use in some aspect of the project design should be listed as an option in Step 1 unless it can be demonstrated that such an option would disrupt the applicant’s basic business purpose for the proposed facility.”). Here, a greater use of natural gas would disrupt Sierra Pacific’s intent to burn the biomass waste it produces from mill operations.¹¹

Notably, unlike the facilities in *NMU* and *Cash Creek*, Sierra Pacific does not propose to use natural gas as a “secondary” or backup fuel source but only for strictly limited purposes. And unlike the facilities in *NMU* and *Cash Creek*, Sierra Pacific gave valid reasons for imposing a 10% cap: that its purpose was to burn as much of its own biomass waste as possible, and that it expected to burn much less than 10% natural gas because it was being used for such a limited purpose. Burning natural gas is therefore incidental to Sierra Pacific’s business purpose of using its on-site source of biomass as fuel for the new facility. Declining to consider greater use of an incidental fuel is not arbitrary, capricious, or an abuse of discretion.¹²

¹¹ This conclusion is supported by evidence in the record that Sierra Pacific produces more waste than could be consumed by the proposed generator.

¹² Petitioners seize upon Sierra Pacific’s admission that it limited natural gas to 10% to avoid the nitrous oxide limiting requirements of the New Source Performance Standards (“NSPS”). See 40 C.F.R. § 60.44b(d). Limiting natural gas to avoid a nitrous oxide emission limit is not a design decision “independent of air permitting.” The Board erroneously held that

Drawing the line between control technology and redefining the source is a technical determination to which a court should defer to EPA, *see Sierra Club*, 499 F.3d at 655, and there was sufficient justification in the record for EPA to determine that primarily burning biomass from Sierra Pacific’s own wood waste, a co-localized source, was an inherent aspect of the facility’s design. Requiring EPA and Sierra Pacific to consider solar power, a completely different fuel source, or a greater percentage of natural gas, an incidental fuel source, would redefine the source. EPA did not act arbitrarily or capriciously and Helping Hand’s petition is denied.

IV

Next we address the claims raised by the Center in response to the supplemental greenhouse gas BACT analysis. The Center contends that EPA could not consider burning of biomass fuel alone as a control option at Step 1 and that it erred in weighing the effects of different biomass fuel stocks at Step 4 instead of directly comparing them at Step 1. Because EPA was largely relying on its own guidance, acting

such a self-imposed cap was acceptable because it was “federally enforceable.” Deciding whether or not to impose a cap of 10% natural gas to avoid NSPS requirements does not exclude consideration of greater utilization of natural gas in the BACT analysis. *See* NSR Manual at B.12 (“The only reason for comparing control options to an NSPS is to determine whether the control option would result in an emissions level less stringent than the NSPS.”). Though troubling, this error does not ultimately undermine the key fact that Sierra Pacific’s basic business purpose and facility design is to use a co-localized source of biomass fuel, its own wood wastes, to generate steam and electricity for its mill and limited use of natural gas is incidental to that purpose. For that reason, any error in justifying the 10% cap is harmless.

at the frontiers of science, we defer to the agency's determination. *See Baltimore Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 103 (1983)

A

We review questions of statutory interpretations of the Clean Air Act by the two-step process of *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 842–43 (1984). *See Vigil v. Leavitt*, 381 F.3d 826, 833–34 (9th Cir. 2004). If Congress has not directly spoken to the precise issue, or the statute is silent or ambiguous, the court must determine if the agency's construction is permissible. *Chevron*, 467 U.S. at 842–43. When Congress has not provided clear guidance in a statute, an agency may fill the gap and its construction is to be given “controlling weight unless . . . arbitrary, capricious, or manifestly contrary to the statute.” *Id.* at 844 (deferring to EPA's interpretation of “source” in the Clean Air Act); *see also EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584, 1603–07 (2014) (deferring to EPA's interpretation of “amount” in the Good Neighbor Provision of the Clean Air Act).

“[T]he weight that we are to give an administrative interpretation not intended by an agency to carry the general force of law is a function of that interpretation's thoroughness, rational validity, and consistency with prior and subsequent pronouncements.” *Wilderness Soc'y v. U.S. Fish & Wildlife Serv.*, 353 F.3d 1051, 1068 (9th Cir. 2003) (en banc). However, when an agency is acting “within its area of special expertise, at the frontiers of science,” the court should “be at its most deferential.” *Baltimore Gas & Elec. Co.*, 462 U.S. at 103; *see also Nat'l Wildlife Fed'n v. U.S. Army Corps of Eng'rs*, 384 F.3d 1163, 1174 (9th Cir. 2004)

(“Where scientific and technical expertise is necessarily involved in agency decision-making, . . . a reviewing court must be highly deferential to the judgment of the agency.”).

What level of deference we must show EPA’s BACT guidance is unclear. The publications are not intended to carry the force of law because EPA must still analyze each application on a case-by-case basis. However, all the publications were promulgated by EPA in order to bring meaning to the BACT statute which Congress has not defined any further than it did in 42 U.S.C. § 7479(3). EPA promulgated these policies specifically to carry out Congress’s intent. We need not resolve the issue here, however, because, as discussed below, under either standard EPA’s actions were neither arbitrary nor capricious.

B

Ultimately, the Center’s concerns are not particular to the Sierra Pacific permit but attack the Bioenergy BACT Guidance. The Bioenergy BACT Guidance builds on the NSR Manual that EPA has used for decades and proposes a more detailed analysis for a particular pollutant—greenhouse gas emissions from biomass fuels—because the emissions from this particular fuel source have unique environmental consequences. Nothing prohibits EPA from refining its top-down BACT approach for particular pollutants—particularly when the refinement is heavily dependent upon the agency’s own scientific expertise. Following the Bioenergy BACT Guidance is therefore thorough, rational, and consistent with EPA’s prior practice. *See Wilderness Soc’y*, 353 F.3d at 1068. And as explained above, we must defer to EPA agency expertise and not disturb the analysis set forth in the Bioenergy BACT Guidance.

In particular, the Center contends that utilization of biomass fuel alone cannot be considered a control technology for the burning of biomass fuel at Step 1 of the BACT analysis because it does not “control” biomass emissions. EPA argues, however, that the option is used as a baseline to which all other options are compared and is not inconsistent with the traditional top-down approach. Moreover, EPA did not ultimately choose this option but selected other control technologies including: combustion of specific biomass fuel stocks; energy efficient design, operation, and maintenance; and employing good combustion practices and efficient operation as a cogeneration unit. In the end, EPA chose the same control measures as five other facilities. Providing a baseline in the BACT analysis does not make the ultimate determination arbitrary, capricious, or even unreasonable.

The Center further argues that the effect of burning different biomass fuel stocks should be considered at Step 1 of the analysis. EPA does not disagree in theory. But EPA currently lacks the scientific data at this time to make such a quantitative determination and is actively collecting the data to do in the future the type of analysis desired by the Center. *See* Bioenergy BACT Guidance at 23. Furthermore, because the same amount of carbon dioxide will be released at the facility no matter which biomass fuel stock is burned, any difference in environmental consequences is indirect. *Id.* at 22. Therefore, consistent with the NSR Manual, these indirect environmental impacts and benefits are better suited to analysis in Step 4.

Acknowledging the differences in the environmental impact of different biomass fuel stocks, however, EPA responded to the Center’s comment by clarifying the fuel restrictions in the final permit. Notably, Sierra Pacific and

EPA were particularly proactive in ensuring the appropriate fuel restrictions were written into the PSD permit. Sierra Pacific's initial application contemplated the use of co-localized mill waste as well as in-forest materials from Sierra Pacific's timber operations and other readily available agricultural and urban wood wastes.

The environmental impact report ("EIR") prepared by EPA noted that there were different estimates of the type of biomass fuel blend Sierra Pacific planned on using, ranging from 100% mill wastes to a blend supplementing mill wastes with biomass from forest-harvesting operations, forest-thinning operations, agricultural waste from the Sacramento Valley, and urban wood waste. EPA therefore conducted the EIR assuming a "worst-case" scenario in which 35% of the biomass used was not co-localized with the facility. The supplemental Statement of Basis and Ambient Air Quality Impact Report also assumed a biomass fuel mix of 75% mill residue and 25% in-forest residues, agricultural residues, and urban wood residues.

Based on the EIR, EPA drafted a PSD permit restricting fuel to "clean cellulosic biomass" allowing Sierra Pacific to burn an extensive list of biomass fuels at the facility. Sierra Pacific commented on the draft asking for more restrictive limitations on the types of biomass fuel it would be allowed to use in its facility because it was more consistent with the original application. EPA adopted Sierra Pacific's modifications in another draft of the permit, which was then further modified in response to the Center's comments.

Though it was not prepared at the time to compare the environmental impacts of sawmill residue versus other biomass wastes, EPA ensured that Sierra Pacific would not

log timber solely for the purpose of using it as biomass for the new facility. EPA limited Sierra Pacific to only the particular biomass fuels readily available to the facility: mill residues, untreated wood debris from urban areas such as pallets and crates, agricultural crops and residues, forest residues, and non-merchantable forest biomass. The only trees that can be burned in Sierra Pacific's facility, therefore, are those that would be removed from the forest anyway as part of Sierra Pacific's ongoing forest management and forest-thinning operations.

Though the Center argues that EPA is equipped to proceed with a quantitative analysis of different biomass fuel stocks at Step 1, EPA says it cannot do that based on the current state of the science. Because the agency is acting at the frontiers of science, we must defer. *See Baltimore Gas & Elec.*, 462 U.S. at 103. The Center does not clearly explain how EPA's analysis here is not thorough, rational, and consistent with EPA's prior guidance on BACT. Sierra Pacific is restricted to the forms of biomass waste readily available to it and cannot clear cut forests just to produce electricity for its lumber mills. EPA did consider the environmental impacts of different biomass fuel stocks, just not in the manner or the level of detail the Center would prefer. Because we must defer to EPA's interpretation of BACT and its scientific expertise, EPA's analysis is not arbitrary, capricious, or an abuse of discretion, and we deny the Center's petition.

V

Sierra Pacific's application went through an extensive process to issue a reasoned PSD permit for its new biomass burning boiler. EPA properly defined the project and rejected

control technologies that redefined the project with thoughtful and reasonable explanations. The Bioenergy BACT Guidance EPA applied to the greenhouse gas emissions from Sierra Pacific's new facility is rational and thoroughly consistent with EPA's prior guidance. The guidance relies extensively on the continually evolving analysis of the environmental effect of different biomass fuels in the ever-developing field of climate-change science. It is not our place to interfere with EPA's expertise when the record shows that its endeavors were reasonable.

Costs are awarded to Respondents.

The petitions for review are **DENIED**.

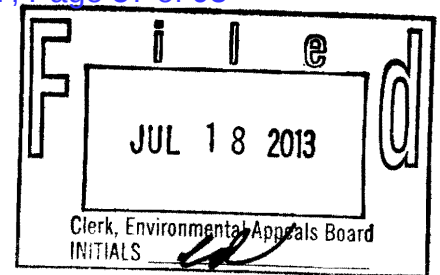
APPENDIX B

Pages from Petitioners' Excerpts of Record ("PER") and Petitioner's Additional Excerpts of Record ("AER") cited in Helping Hand Tools's and Robert Simpson's Petition for Panel Rehearing and Rehearing *En Banc*

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(Slip Opinion)

NOTICE: This opinion is subject to formal revision before publication in the Environmental Administrative Decisions (E.A.D.). Readers are requested to notify the Environmental Appeals Board, U.S. Environmental Protection Agency, Washington, D.C. 20460, of any typographical or other formal errors, in order that corrections may be made before publication.

**BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.**

In re:

Sierra Pacific Industries) PSD Appeal Nos. 13-01,
(Anderson Processing Facility)) 13-02, 13-03 & 13-04
PSD Permit No. SAC 12-01)
)

[Decided July 18, 2013]

**ORDER REMANDING IN PART AND
DENYING REVIEW IN PART**

*Before Environmental Appeals Judges Leslye M. Fraser,
Randolph L. Hill, and Kathie A. Stein.*

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5. *The Region Did Not Clearly Err or Abuse Its Discretion in Determining That the Addition of a Solar Energy Component or the Alteration of the 90% Biomass-10% Natural Gas Fuel Mix Would “Redefine the Source”*

To establish appropriate air pollution emissions limits through BACT analyses, permit issuers routinely consider the capabilities of “inherently lower polluting” processes or practices and “add-on” air pollution control technologies that are available for use at the proposed facility. *See* Office of Air Quality Planning & Standards, U.S. EPA, *New Source Review Workshop Manual* B.10 (draft Oct. 1990). As a general matter, however, Agency policy provides that permit issuers need not consider technology alternatives that would require “redefining the design” of the source (or, as shorthand terminology, “redefining the source”), as proposed by the permit applicant. *See id.* at B.13; *Knauf II*, 8 E.A.D. at 136.

The Board has developed a body of case law on the concept of “redefining the source,” which contains detailed explanations of the history, basis, and functioning of the policy. *See, e.g., In re City of Palmdale*, PSD Appeal No. 11-07, slip op. at 34-52 (EAB Sept. 17, 2012), 15 E.A.D. ___, *appeal docketed sub nom. Simpson v. EPA*, No. 12-74124 (9th Cir. Dec. 18, 2012); *In re Desert Rock Energy Co.*, PSD Appeal Nos. 08-03 to -06, slip op. at 56-65 (EAB Sept. 24, 2009), 14 E.A.D. ___; *NMU*, slip op. at 26-28, 14 E.A.D. at ___; *In re Prairie State Generating Co.*, 13 E.A.D. 1, 14-34 (EAB 2006), *aff’d sub nom. Sierra Club v. EPA*, 499 F.3d 653 (7th Cir. 2007).

In a nutshell, these cases indicate that permit issuers should begin their analyses of potentially available control technologies by examining how the permit applicant defines the proposed facility’s “purpose” or “basic design,” which typically is set forth in the permit application and related documents. *See, e.g., Palmdale*, slip op. at 43, 45, 15 E.A.D. at ___; *Desert Rock*, slip op. at 64, 66-67, 14 E.A.D. at ___; *Prairie State*, 13 E.A.D. at 21-23. The permit issuer then takes a “hard look” at which design elements are “inherent” to the applicant’s purpose and which design elements could possibly be altered to achieve pollutant emissions reductions without disrupting the applicant’s “basic business purpose” for the proposed facility. *See,*

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e.g., *Desert Rock*, slip op. at 64, 69, 14 E.A.D. at ____; *NMU*, slip op. at 26-28, 14 E.A.D. at ____; *Prairie State*, 13 E.A.D. at 27; *Knauf I*, 8 E.A.D. at 136-44. In taking this hard look, the permit issuer must ensure that the proposed facility's design has been "derived for reasons independent of air quality permitting." *Palmdale*, slip op. at 43, 15 E.A.D. at ____ (citing cases). Finally, the permit issuer has discretion under section 165(a)(2) of the CAA, 42 U.S.C. § 7475(a)(2), to consider "alternatives" to the proposed facility. *See, e.g.*, *Desert Rock*, slip op. at 56, 68-72, 14 E.A.D. at ____; *Prairie State*, 13 E.A.D. at 28-34.

In the present case, Mr. Simpson argues that the Region provided an inadequate response, unsupported by the administrative record, to his comment suggesting that a solar energy component be considered in the BACT analyses for the proposed facility. Simpson Pet. at 5-7. Mr. Simpson had commented that "[a] solar component would reduce all emissions by preheating the system or augmenting the electrical output. Solar energy is an inherently lower emitting, add-on control technology." Simpson Comments at 2. Mr. Simpson also argues on appeal that the Region erred by failing to include in the BACT analyses different variations of the permitted fuel mix (10% natural gas, 90% biomass). Simpson Pet. at 7-10. He states in his comments that increased gas use would raise the total combustion temperature, produce more complete combustion, and reduce emissions, resulting in a cleaner facility. Simpson Comments at 1.

In declining to consider solar energy in its BACT analysis, the Region responded as follows:

A solar component for this Project presents a significant departure from the existing facility's operations and the Project's purpose. In this instance, the existing lumber facility will add equipment within its existing physical footprint and utilize the excess biomass at this and other Sierra Pacific sawmill or lumber operations.

RTC at 13. The Region similarly declined to augment the BACT analyses by investigating different fuel mix proportions, claiming that

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it was “unclear what mix the commenter is ultimately recommending and where this should be incorporated into the analysis.” *Id.* The Region further explained that “[a]ccording to Sierra Pacific’s 2010 Application, Sierra Pacific intends to use biomass from existing Sierra Pacific facilities, as well as in-forest materials and various sources of agricultural and urban wood waste. Therefore, an *inherent* aspect of the project is that its fuel use be primarily biomass.” *Id.* (emphasis added).

The Board finds no basis for a remand on these issues. The Board’s review of the record as a whole makes clear that Sierra Pacific’s “purpose” in proposing this project is to put to use the hundreds of thousands of bone-dry tons of wood waste the lumber company has in the Shasta County region, for the production of lumber and electricity. *See, e.g., ENVIRON Int’l Corp., Biomass-Fired Cogeneration Project Authority to Construct and [PSD] Permit Application for Sierra Pacific Industries-Anderson Facility* 3-4 (Mar. 2010) (AR 1.01) (“Permit Appl.”); AAQIR at 3-4. These productive uses of waste biomass are the core of the proposed project; thus, the “inherent aspect” identified by the Region in the response to comments as the burning of biomass is reasonable and supported by the record. Indeed, the record establishes that Sierra Pacific has more surplus biomass at its various facilities than its proposed Anderson boiler can consume on an annual basis. Specifically, the Region’s AAQIR states:

Currently, the Anderson lumber operation produces approximately 160,000 BDT of wood waste per year. Approximately 60,000 BDT are consumed by the existing cogeneration unit, 20,000 BDT are trucked to other biomass power plants, and the roughly 80,000 BDT balance is trucked to other markets (e.g. wood chips to pulp mills). The new proposed boiler will have the capacity to consume *a maximum of 219,000 BDT per year*. Roughly 80,000 BDT will be generated by the facility’s existing lumber operations at its current output, [and] additional wood fuel will be transported by truck to the facility *from [Sierra Pacific’s] other lumber operations in California*.

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AAQIR at 4 (emphasis added); *see* Permit Appl. at 3-4 (“the available supply from [Sierra Pacific]-owned or [-]controlled facilities and timberlands totals 400,000 [BDT] per year”). Given these facts, requiring Sierra Pacific to burn fewer tons of wood waste so that it could generate solar power or burn more natural gas instead would plainly disrupt the project’s “basic business purpose” of using as much surplus biomass as possible to generate steam to be “used to dry lumber in existing kilns for the lumber operation, as well as feed a turbine that will drive a generator to produce electricity for use on site or for sale to the electrical grid.”³⁶ AAQIR at 4.

Solar power in particular would displace the applicant’s proposal with an alternative energy source that, even though renewable like biomass, would play absolutely no role in putting to beneficial use Sierra Pacific’s millions of tons of wood waste. Given these facts, requiring Sierra Pacific to set aside some of its surplus biomass so that a solar component could be constructed and operated instead would impermissibly redefine the source. *See, e.g., Prairie State*, 13 E.A.D. at 14-34 (rejecting arguments that a proposed “mine-mouth” coal facility be compelled to burn low-sulfur fuel or install alternative power sources (such as wind or solar) because such changes would “redefine the source”). Accordingly, the Region did not err by refusing to consider this option further.

The question of fuel mix is a closer one, in light of the fact that the Agency’s Greenhouse Gas Permitting Guidance acknowledges that “when a permit applicant has incorporated a particular fuel into one aspect of the project design (such as startup or auxiliary

³⁶ The Board notes that in its responses to comments, the Region gave somewhat different responses as to the basic “purpose” of the facility. *Compare, e.g.,* RTC at 13 (stating that a solar component “presents a significant departure” from the project’s “purpose,” and noting that “an inherent aspect of the project is that its fuel use be primarily biomass”) *with id.* at 24 (explaining that Sierra Pacific’s “business purpose in constructing the new boiler is two-fold: to [provide] process steam for its mill operations and to provide a renewable energy source of grid power”). The Region should take care in the future to ensure that its statements regarding a project’s “purpose” or “basic design” are clear and precise, so as to avoid misunderstandings of the kind presented by members of the public in this case.

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applications), this suggests that a fuel is ‘available’ to a permit applicant.” Office of Air Quality Planning & Standards, U.S. EPA, Doc. No. EPA-457/B-11-001, *PSD and Title V Permitting Guidance for Greenhouse Gases* 28 (Mar. 2011). “In such circumstances,” the guidance continues, “greater utilization of a fuel that the applicant is already proposing to use in some aspect of the project design should be listed as an option in Step 1 [of the BACT analysis,] unless it can be demonstrated that such an option would disrupt the applicant’s basic business purpose for the proposed facility.” *Id.*

This guidance gives a straightforward answer to the Region’s purported questions about where in the BACT analysis consideration of differing fuel mixes should be incorporated. *See* RTC at 13. However, though the Region readily could have evaluated higher percentages of natural gas than the 10% proposed by Sierra Pacific, to do so again would have undermined the company’s plan to use as much of its waste biomass fuel as possible, particularly at the 49% gas level Mr. Simpson suggests. *Simpson Pet.* at 9. It also would have triggered the imposition of New Source Performance Standards (“NSPS”) emissions limits for NO_x that apply on an on-going basis to wood- and natural gas-fired boilers of the type proposed by Sierra Pacific. *See* 40 C.F.R. § 60.44b(d). The Agency’s CAA regulations provide that if such a boiler has an “annual capacity factor” for natural gas that is less than or equal to 10% of the total fuel input per year, and if the owner/operator of such a boiler agrees to accept a federally enforceable permit condition that restricts the natural gas fuel capacity factor to 10% or less annually, then the owner/operator is allowed to combust natural gas without complying with the NO_x NSPS. *Id.*

Sierra Pacific opted to accept such a permit condition, *see* Final Permit at 10 (cond. X.G.2), which is perfectly acceptable and lawful. *See, e.g.,* 40 C.F.R. § 52.21(b)(4) (providing, in the definition of a facility’s “potential to emit,” that an operational limit, such as a restriction on the amount of material combusted, “shall be treated as part of [the facility’s] design” if the limit is federally enforceable); *id.* § 52.21(b)(17) (providing that PSD permit conditions are “federally enforceable”). It is not evidence of a project design “derived for reasons of air quality permitting,” as Mr. Simpson alleges. *See Simpson Pet.* at 10; *see also Desert Rock*, slip op. at 64, 14 E.A.D.

at ____ (noting that factors such as the “cost savings” of choosing one control technology over another, or the “avoidance of risks associated with new, innovative, or transferable technologies,” would not be considered “fundamental” to a facility’s “basic design”). Instead, the record establishes that Sierra Pacific will fire natural gas during boiler startup and shutdown because that fuel – rather than biomass – can best be used to increase combustion temperatures in a controlled fashion and to stabilize the boiler flame during transitional periods. Biomass then can be burned safely and efficiently during steady-state conditions. *See, e.g.*, Permit Appl. at 3, 5; AAQIR at 1, 12-13, 22, 37.

This prudent use of natural gas does not obviate Sierra Pacific’s basic goal of using its excess wood waste to produce new wood products and electricity, and the company’s lawful acceptance of a 10% gas cap is incidental to the project’s basic design. It also does not, by itself, suggest that the project’s fuel mix can be readily changed without disrupting Sierra Pacific’s fundamental business purpose of using its surplus natural resources in a beneficial manner.³⁷ In sum, requiring Sierra Pacific to reduce its surplus biomass fuel so that it could increase its natural gas fuel would impermissibly redefine this proposed source. Accordingly, this option need not be entertained further. *See* Reg. 9 Resp. at 38 (arguing, correctly, that “[t]he use of a federally enforceable permit condition to avoid a potentially applicable

³⁷ In its response to the petitions, Sierra Pacific asserts that “one of the important business purposes of the biomass boiler is to take part in California’s renewable portfolio standard (‘RPS’), and increasing natural gas usage beyond 10% would disqualify the plant for the RPS.” Sierra Pacific Resp. at 18. Notably, this RPS purpose does not appear in Sierra Pacific’s 2010 Application, nor in the public notice or AAQIR the Region issued in September 2012, nor has any information been provided to the Board by either the Region or Sierra Pacific during these proceedings regarding the RPS program to support this business objective. Indeed, the only reference to the RPS program that the Board has been able to locate is in a June 2012 report submitted to the Shasta County Planning Commission. *See* Reg. 9 Resp. attach. 1, exc. 12, at 3 (noting that “the facility would be eligible for procurement through the State of California’s [RPS,] which requires electric corporations to increase procurement of electricity generated from renewable energy sources”). In the absence of more relevant and timely record references, the Board assigns little weight to this belated assertion of project purpose.

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requirement does not invalidate the facility design or related determinations regarding basic business purpose”).

D. The Board Declines to Reach the Carbon Dioxide Deferral Rule Issue

Finally, Mr. Simpson incorporates by reference CBD’s comments on the draft PSD permit, which challenged, among other things, the Region’s decision to defer consideration of “biogenic” carbon dioxide (“CO₂”) emissions³⁸ from Sierra Pacific’s proposed large-scale burning of wood and wood waste. *See* Simpson Pet. at 10-11; CBD Comments at 10-12. According to Mr. Simpson, the Region’s deferral decision is clearly erroneous because it is based on “unlawful rules” whose application in this case results in Sierra Pacific being exempted from BACT requirements for biogenic CO₂ emissions. Simpson Pet. at 10. Mr. Simpson writes, “By not relying on unlawful rules[,] the Region would have fully evaluated the project and [would] not have approved it as they did.” *Id.*

In its response to CBD’s comments on this issue, the Region explained that EPA had issued a final rule in July 2011 that justified the Region’s deferral choice. That final rule had established a three-year deferral period for regulatory decisions about CO₂ emissions from biogenic sources (such as Sierra Pacific’s proposed boiler), during which time the Agency planned to conduct further scientific review of biogenic CO₂ emissions before deciding whether and how to regulate such emissions. *See* RTC at 34-35; *see also* Deferral for CO₂ Emissions from Bioenergy and Other Biogenic Sources Under the [PSD] and Title V Programs, 76 Fed. Reg. 43,490 (July 20, 2011) (“Deferral Rule”). The Region further stated that an appeal of this rule

³⁸ “Biogenic CO₂ emissions” are emissions of CO₂ from stationary sources that “directly result[] from the combustion or decomposition of biologically[] based materials other than fossil fuels and mineral sources of carbon.” Deferral for CO₂ Emissions from Bioenergy and Other Biogenic Sources Under the [PSD] and Title V Programs, 76 Fed. Reg. 43,490, 43,493 (July 20, 2011). “Examples of ‘biogenic CO₂ emissions’ include, but are not limited to: * * * CO₂ derived from combustion of biological material, including all types of wood and wood waste, forest residue, and agricultural material.” *Id.*

**PREVENTION OF SIGNIFICANT DETERIORATION PERMIT
PROPOSED PURSUANT TO THE
REQUIREMENTS AT 40 CFR § 52.21**

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION IX

PSD PERMIT NUMBER: SAC 12-01

PERMITTEE: Sierra Pacific Industries
P.O. Box 496028
Redding, CA 96049-6028

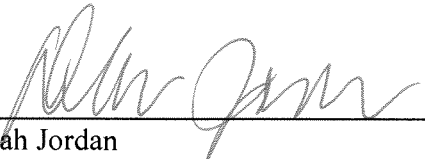
FACILITY NAME: Sierra Pacific Industries- Anderson

FACILITY LOCATION: 19758 Riverside Avenue
Anderson, California 96007

Pursuant to the provisions of the Clean Air Act (CAA), Subchapter I, Part C (42 U.S.C. Section 7470, *et. seq.*), and the Code of Federal Regulations (CFR) Title 40, Section 52.21, the United States Environmental Protection Agency Region 9 (EPA) is issuing a *Prevention of Significant Deterioration* (PSD) air quality permit to Sierra Pacific Industries (SPI). This Permit applies to the approval to construct and operate a new stoker boiler capable of generating 31 MW of gross electrical output from the combustion of clean cellulosic biomass, and related auxiliary equipment.

SPI is authorized to construct and operate the 31 MW cogeneration unit at SPI-Anderson as described herein, in accordance with the permit application (and plans submitted with the permit application), the federal PSD regulations at 40 CFR § 52.21, and other terms and conditions set forth in this PSD Permit. Failure to comply with any condition or term set forth in this PSD Permit may be subject to enforcement action pursuant to Section 113 of the Clean Air Act. This PSD Permit does not relieve SPI from the obligation to comply with applicable federal, state, and Shasta County Air Quality Management District (District) air pollution control rules and regulations.

Per 40 CFR § 124.15(b), this PSD Permit becomes effective 30 days after the service of notice of this final permit decision unless review is requested on the permit pursuant to 40 CFR § 124.19.



Deborah Jordan
Director, Air Division

4/25/14

Date

**SIERRA PACIFIC INDUSTRIES - ANDERSON (SAC 12-01)
PREVENTION OF SIGNIFICANT DETERIORATION PERMIT
PERMIT CONDITIONS**

PROJECT DESCRIPTION

Sierra Pacific Industries, Inc. (SPI) applied for the approval to construct and operate a new stoker boiler capable of generating 31 MW of gross electrical output from the combustion of biomass and natural gas, and related auxiliary equipment. The original Prevention of Significant Deterioration (PSD) permit for this lumber manufacturing facility was issued in 1994 by the Shasta County Air Quality Management District (District). The site currently contains a wood-fired boiler cogeneration unit with associated air pollution control equipment and conveyance systems that produce steam to dry lumber in existing kilns. On March 3, 2003, USEPA revoked and rescinded the District's authority to issue and modify federal PSD permits for new and modified major sources of attainment pollutants in Shasta County. Therefore, EPA is issuing this PSD permit to authorize SPI to construct and operate the additional boiler and related auxiliary equipment described in this permit at the SPI-Anderson facility. The PSD permit previously issued by the District to SPI is still in effect and applies to existing equipment at the SPI-Anderson site.

Fuel for the new stoker boiler will be generated on site and received from other fuel sources, mainly other SPI facilities, to produce roughly 250,000 pounds per hour of steam. This steam will be used to dry lumber in existing kilns for the lumber operation, as well as feed a turbine that will drive a generator to produce electricity for use on site or for sale to the grid. A closed-loop three-cell cooling tower will be used to dispose of waste heat from the steam turbine.

This PSD permit for the modification requires the use of Best Available Control Technology (BACT) to limit emissions of nitrogen oxides (NO_x), carbon monoxide (CO), total particulate matter (PM), PM under 10 micrometers (µm) in diameter (PM₁₀), PM under 2.5µm in diameter (PM_{2.5}), and greenhouse gases (GHG), to the greatest extent feasible. Air pollution emissions from the modification will not cause or contribute to violations of any National Ambient Air Quality Standards (NAAQS) or any applicable PSD increments for the pollutants regulated under the permit.

Additional equipment includes the construction of an additional cooling tower and an emergency natural gas engine to power the emergency boiler recirculation pump.

EQUIPMENT LIST

Table 1 lists the new equipment that will be regulated by the proposed PSD permit:

Table 1 - New Equipment List Regulated by the PSD Permit

ID	Unit	Description
U1	One Stoker Boiler with Grate	<ul style="list-style-type: none"> Biomass-fired with natural gas burners for start-up Maximum heat input of approximately 468 MMBtu/hr and steam generation rate of 250,000 lbs/hr Equipped with two natural gas burners, each with a maximum rated heat input of 62.5 MMBtu/hr Equipped with selective non-catalytic reduction (SNCR) system to reduce NO_x, and multiclone with an electrostatic precipitator (ESP) to control PM emissions
U2	Cooling Tower	<ul style="list-style-type: none"> Composed of three cells with an expected water load of 4.24 gallons per minute per square foot.
U3	Emergency Engine	<ul style="list-style-type: none"> 256 hp at 1,800 rpm Spark-ignition internal combustion, natural gas-fired Powers emergency boiler recirculation pump 40 CFR Part 60 - Subpart JJJJ Compliant

Table 2 lists the existing equipment that is not included in this PSD permit. The equipment listed below is permitted by the District and the Permittee must comply with all applicable requirements of the PSD permit (Permit No. 94-PO-18) issued by the District. Table 2 is provided for reference purposes only:

Table 2 - Existing Equipment List

ID	Unit	Description
U4	One Wellons Stoker Boiler	<ul style="list-style-type: none"> Biomass-fired Maximum annual average heat input of approximately 116.4 MMBtu/hr Equipped with SNCR system to reduce NO_x, and multiclone with ESP to control PM emissions Equipped with one 30,400 ft³ fuel storage bin, 2 hog fuel bins, 2 wood chip fuel bins
U5	One Conveyance System	<ul style="list-style-type: none"> (2) Cyclones with combined flow rate of 51,004 scfm (1) 7,118 ft² MAC Pulse Jet Baghouse with 300hp Blower (1) 35" x 45" Rotary Airlock (1) Buhler en-masse, 19", 22tph Conveyor (2) Each overhead storage bins with enclosed sides
U6	One Spray Unit	<ul style="list-style-type: none"> Closed loop unit equipped with integrated, negative pressure, mist collection system and 65' exhaust stack
U7	One Wood Chip Loading Facility	<ul style="list-style-type: none"> (1) Platform truck dumper (1) Wood chip conveying system with dust containment hood (1) 200hp, 59,000CFM Rader blower
U8	Seven De-greasing Tanks	<ul style="list-style-type: none"> Non-solvent based tanks
U9	One Gas Storage Tank	<ul style="list-style-type: none"> Above ground with 10,000 gallon capacity tank
U10	One Painting Operation	<ul style="list-style-type: none"> Miscellaneous painting operation
U11	Drying Kilns	<ul style="list-style-type: none"> (8) steam-heated, double-track, lumber drying kilns

Table 4 - U1 Short-Term Emission Limits

Pollutant	U1
NO_x	<ul style="list-style-type: none"> • 70.2 lbs/hr (3-hour block average) • 0.13 lbs/MMBtu (12-month rolling basis) • 0.15 lbs/ MMBtu (3-hour block average) • EPA Method 1-4 and 7E
CO	<ul style="list-style-type: none"> • 107.7 lbs/hr (3-hour block average) • 0.23 lb/MMBtu (3-hour block average) • EPA Method 1-4 and 10
PM, PM₁₀, PM_{2.5}	<ul style="list-style-type: none"> • 0.02 lb/MMBtu (3-hour block average) • 9.4 lb/hr (hourly average), corrected to 12% CO₂

- CO emissions at all times from U1, including startup and shutdown events as defined *Conditions X.D.3. and X.D.4.*, shall not exceed 432 lbs/hr (hourly average).
- Steam production from U1 shall not exceed 275,000 lbs/hr (24 hour block average).
- Visible emissions from U1, except for uncombined water vapor or during periods defined in *Condition X.D.*, shall not exceed 20% opacity in any six minute period, as verified by the continuous opacity monitoring system (COMS).
- Visible emissions from the U1 shall not exceed 40% opacity for more than three minutes out of any one 60-minute period.
- At all times, including equipment startup and shutdown, Permittee shall minimize the cause or discharge of the following emissions:
 - Dust from unpaved roads or any other non-vegetation-covered area.
 - Fugitive sawdust from fuel-handling devices and/or storage areas.
 - Char and/or bottom ash which is processed by the char handling systems or removed from U1 by other means.
 - Accumulation of sawdust or ash on outside surfaces including, but not limited to, the main building, U1, ESP, support pads, road areas. Surfaces shall be cleaned on a regular basis to prevent the build-up of ash and/or fugitive dust.
 - Fuel dust or ash spilled due to an upset condition shall be cleaned up in a timely manner. In no event shall spilled dust or ash be allowed to exist beyond 24 hours of the upset.

D. Requirements during Startup and Shutdown

- Only biomass fuels, as defined in *Condition X.G.1*, and Public Utilities Commission (PUC)-quality pipeline natural gas shall be fired during periods of startup, shutdown, and flame stabilization.

2. For U1, normal operating temperature shall be defined as the normal operating temperature specified by the unit manufacturer.
3. For U1, startup shall be defined as the period beginning with U1 not in operation and concluding when U1 has reached a normal operating temperature. During startup, the generator shall be separated from the electrical grid.
4. For U1, shutdown shall be defined as the period beginning with curtailment of fuel feed and concluding when the recorded superheater outlet temperature reaches 150°F and remains so for at least one hour. During shutdown, the generator shall be separated from the electrical grid.
5. For U1, the duration of startup and shutdown periods and emissions of NO_x, CO, PM, PM₁₀ and PM_{2.5} shall not exceed the following, as verified by the CEMS and fuel usage data:

Table 5 - U1 Startup and Shutdown Limits

	NO_x (8 hour average)	CO (8 hour average)	PM, PM₁₀, PM_{2.5} (24 hour average)	Duration
Startup	70.2 lb/hr	108 lb/hr	8.93 lb/hr	24 hours
Shutdown	70.2 lb/hr	108 lb/hr	8.93 lb/hr	24 hours

6. For U1, the Permittee must operate the CEMS during startup and shutdown periods.
7. For U1, the Permittee must record the time, date, and duration of each startup and shutdown event.
8. For U1, the Permittee must keep records that include calculations of NO_x, CO, PM, PM₁₀, PM_{2.5} and emissions in lb/hr and lb/MMBtu during each startup and shutdown event based on the CEMS and fuel usage data.

E. Auxiliary Equipment Emissions Limitations

1. Permittee shall not discharge or cause the discharge from each unit into the atmosphere in excess of the following:

Table 6 - U2 and U3 Emission Limits

Pollutant	U2	U3
NO_x	N/A	• 0.78 lb/hr
CO	N/A	• 4.0 g/hp-hr (3-hour block average) • 6.11 lb/hr
PM/ PM₁₀	• 0.272 lbs/hr (hourly average)	• 0.0216 lb/hr

2. Except during an emergency, U3 shall be limited to operation for maintenance and testing purposes. Annual hours of operation for U3, for maintenance and testing, shall not exceed 100 hours per 12-month rolling average.

F. Operating Conditions and Work Practices

1. *Low SNCR activation temperature* shall be defined as the lowest operating temperature for U1 at which the SNCR system is recommended for operation to reduce NO_x emissions as defined by the SNCR manufacturer. This temperature value shall be included in the operation and maintenance plan required by *Condition III.C*.
2. For U1, SNCR systems for the control of NO_x shall be in operation at all times that U1 exceeds the *low SNCR activation temperature*.
3. For U1, the multiclones and ESP for the control of PM, PM₁₀ and PM_{2.5} shall be in operation at all times during the combustion process.
4. U3 shall not operate during startup of U1, except when required for emergency operations.
5. Wood waste collection and storage bin leaks shall be minimized at all times. All identified wood waste collection and storage bin leaks, spills and upsets of any kind shall be corrected or cleaned immediately, within 4 hours, as practicable, to correct the leak, spill or upset.
6. Wood waste collection and storage bins shall be emptied on a schedule that ensures that the cyclone-separator system does not become plugged.
7. Wood waste collection and storage bins, not including the fuel shed, shall remain enclosed to mitigate the fugitive emissions from the unloading process.
8. All ash shall be transported in a wet condition in covered containers or stored in closed containers at all times.
9. Fugitive dust generated from access and on-site roads shall be minimized by application of water, dust palliative, chip-sealing, or paving.

10. Fugitive dust from storage piles, processing area, and disturbed areas shall be minimized by periodic cleanup and/or use of sprinklers, tarps, or dust palliative agents.
11. During periods of high winds, Permittee shall take immediate action to correct fugitive dust emissions from the chip processing area.
12. All necessary surfaces shall be cleaned or washed sufficiently to prevent wind-blown dust from leaving the property boundaries.
13. All truck loading and unloading conducted at the facility shall be done in a manner that minimizes spillage, and fugitive emissions.
14. For U2, the drift rate shall not exceed 0.0005%.
15. Each container holding volatile organic waste shall be labeled with the contents identified and information noting the date when waste material was added.
16. The Permittee shall inspect all containers holding VOCs or waste, at least weekly, for leaks and for deterioration caused by corrosion or other factors.
17. Containers holding ignitable or reactive waste must be located within the property boundary at least 50 feet from the facility's property line.
18. Incompatible wastes must not be placed in the same container. The treatment, storage, and disposal of ignitable or reactive waste, and the commingling of wastes, or wastes and materials, must be conducted so it does not:
 - a. Generate extreme heat, pressure, explosion, or violent reaction;
 - b. Produce uncontrolled toxic mists, fumes, dusts or gases in sufficient quantities to threaten human health;
 - c. Produce flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
 - d. Damage the structural integrity of the device or facility containing the waste; or
 - e. Through other means threaten human health or the environment.

G. Fuel Restrictions

1. The following biomass fuels shall constitute the only fuel allowed for use as fuel in U1, except during periods defined in *Condition X.D.* and to counteract upset conditions:
 - a. Untreated wood pallets, crates, dunnage, untreated manufacturing and

- construction wood debris from urban areas;
 - b. All agricultural crops or residues;
 - c. Mill residues including hog fuel, shavings, sawdust, trimmings, and bark.
 - d. Forest residues including treetops, non-merchantable sections of the stem, branches, and bark, left on the ground after logging or accumulating as a result of a storm, fire, delimbing, or other similar disturbance.
 - e. Non-merchantable forest biomass consisting of byproducts and residuals of forest management activities identified to follow all of the following practices;
 - (1) Harvested pursuant to an approved timber management plan prepared in accordance with the Z'berg-Nejedly Forest practice Act of 1973 or other locally or nationally approved plan; and
 - (2) Harvested for the purpose of forest fire fuel reduction or forest stand improvement.
2. The heat input from pipeline natural gas shall not exceed 10% of the total heat input to U1 on a 12-month rolling basis.
 3. The heat input to U3 shall only be PUC-quality pipeline natural gas

H. Monitoring Conditions

1. For U1, the Permittee shall maintain the following continuous monitoring systems at all times when the combustion process is occurring:
 - a. The Permittee shall install, calibrate, operate and quality-assure a Continuous Emissions Monitoring System (CEMS) that measures CO, NO_x, and CO₂.
 - b. The CO and NO_x CEMS shall measure and record (i) CO and NO_x emissions in ppmv, and (ii) exhaust gas CO and NO_x concentrations corrected to 12 percent by volume stack gas CO₂ dry basis.
 - c. The Permittee shall conduct initial certification of the CEMS in accordance with *Condition X.H.2*.
 - d. The Permittee shall operate and maintain a Continuous Opacity Monitoring System (COMS) capable of measuring stack gas opacity.
 - e. The Permittee shall install a stack gas volumetric flowrate monitor, and steam production rate monitor.
2. The CEMS and stack gas volumetric flowrate monitor for U1 shall meet the applicable requirements of 40 CFR Part 60.13 and 40 CFR Part 60 Appendix B, and 40 CFR Part 60 Appendix F, Procedure 1.
3. Each CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute clock-hour period.

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX**



**STATEMENT OF BASIS AND
AMBIENT AIR QUALITY IMPACT REPORT**

**For a Clean Air Act
Prevention of Significant Deterioration Permit**

**Sierra Pacific Industries-Anderson
PSD Permit Number SAC 12-01**

September 2012

installation of an oxidation catalyst, SPI has expressed significant doubts that the catalyst will be able to reliably and effectively control CO given its fuel type and operation. In addition, the increased annual costs of an oxidation catalyst present a significant financial burden at this existing sawmill facility.

Based on a review of the available control technologies for CO emissions from biomass boilers selected for this purpose, we have concluded that BACT for the stoker boiler to perform this operation is 0.23 lb/MMBtu (3-hour block average) employing good combustion practices. We are also requiring a lb/hr mass emission rate of 108 lb/hr (3-hour block average) during normal operations.

7.1.3. Particulate Matter- PM, PM₁₀, PM_{2.5}

Particulate emissions are the result of unburned solid carbon (soot), unburned vapors or gases that subsequently condense, and unburned portions of fuel (ash). Because the applicant has assumed that all particulate emissions from the boiler are PM_{2.5}, the BACT analyses for PM, PM₁₀ and PM_{2.5} have been combined. Additionally, the analysis evaluates total particulate emissions – condensable and filterable.

Step 1 – Identify All Control Technologies

The following inherent control options for PM, PM₁₀ and PM_{2.5} emissions include:

- Low sulfur fuels for normal operation, and/or pipeline natural gas for startup and shutdown
- Good combustion practices

The available add-on PM, PM₁₀, PM_{2.5} control technologies include:

- Cyclones (including multiclones)
- Venturi scrubber
- Electrostatic precipitator (ESP)
- Baghouse/ Fabric filter.

Low sulfur fuels

The wood fuels to be used predominantly during normal operation along with the pipeline natural gas to be used during startup and shutdown are not generally considered high-sulfur fuels.

Good combustion practices

A modern biomass-fired boiler furnace, operated with computerized controls to ensure good combustion practices, would result in a PM, PM₁₀ and PM_{2.5} emission limit between 0.33 lb/MMBtu and 0.56 lb/MMBtu, based on U.S. EPA's AP-42 Compilation of Air Pollutant Emission Factors for wood residue combustion in boilers.

The add-on technologies described below are technically feasible for this project.

Cyclones or Multiclones

Cyclones or multiclones, a series of single cyclone particulate matter separators, operate in a similar manner. An inlet gas stream enters the cyclone or multiclone at an angle causing the gas stream to spin rapidly. The resulting centrifugal forces push the larger particulate into and down along the cyclone walls for collection.

Venturi Scrubbers

Venturi scrubbers reduce particulate by introducing liquid into a converging section of a gas stream. The particulate in the gas stream is removed when it mixes with the liquid and forms tiny droplets that are collected and removed. With gas-side pressure drops exceeding 15 inches of water, particulate collection efficiencies of 85% or greater have been reported for venturi scrubbers operating on wood-fired boilers.

Electrostatic precipitator (ESP)

Electrostatic precipitators use electrostatic forces to separate particulate from the gas stream. When applied to wood-fired boilers, ESPs are often used downstream of mechanical collector pre-cleaners which remove larger-sized particles. Collection efficiencies of 90-99% for particulate have been observed for ESPs operating on wood-fired boilers.

Baghouse/ Fabric filter

Baghouses or fabric filters have had limited applications to wood-fired boilers. The principal drawback to fabric filtration is a fire danger arising from the collection of combustible carbonaceous fly ash. Although some fabric filters have demonstrated lower collection efficiencies, most fabric filter particle collection efficiencies are 90-99%, equivalent to ESPs.

Step 2 – Eliminate Technically Infeasible Options

All of the available control options identified in Step 1 are technically feasible. Cyclones are often used in conjunction with the other control technologies listed above.

Step 3 – Rank Control Technologies

A summary of recent BACT determinations for biomass-fired stoker boilers with PM, PM₁₀, and PM_{2.5} emission limits is provided below. The applicant has proposed a total PM, including filterable and condensable particulate, emission limit of 0.02 lb/MMBtu (3 hour block average) utilizing an ESP preceded by a multiclone. SPI has proposed the most stringent PM, PM₁₀, and PM_{2.5} emission limit of biomass stoker boilers that have constructed.

Table 7.1-5: Recent PM, PM₁₀, PM_{2.5} BACT Determinations for Similar Units

Facility Name	State	Permit #	Permit Date	Control Method	Limit	Status
Berlin Biopower*	NH	TP-0054	07/26/2010	Baghouse	0.01 lb/MMBtu	Project Canceled
Warren County Biomass	GA	4911-301-0016-P-01-0	12/17/2010	Baghouse	0.018 lb/MMBtu	Not Constructed
Beaver Wood Energy Fair Haven	VT	AP-11-015	02/10/2012	ESP	0.019 lb/MMBtu	Not Constructed
SPI-Anderson	CA	SAC 12-01	Proposed	ESP	0.02 lb/MMBtu	
SPI- Skagit County Lumber Mill	WA	PSD 05-04	01/25/2006	ESP	0.02 lb/MMBtu	
Darrington Energy Cogeneration	WA	PSD 03-04	02/11/2005	DRY ESP	0.02 lb/MMBtu	
Fibrominn Biomass	MN	15100038-001	10/23/2002	Baghouse	0.02 lb/MMBtu	
Simpson Tacoma Kraft Company	WA	PSD-06-02	05/22/2007	ESP	0.02 lb/MMBtu	
Rome Linerboard Mill	GA	2631-115-0021-V-01-4	10/13/2004	ESP	0.025 lb/MMBtu	
Lufkin Generating Plant	TX	81706	26-Oct-09	ESP	0.025 lb/MMBtu	

*Filterable only

SPI has estimated that the use of a multiclone followed by an ESP or baghouse will be equally effective in the control of particulate matter from the proposed boiler. The feasible control technologies ranked in decreasing order of effectiveness are:

Table 7.1-6: Ranking of PM/ PM₁₀/ PM_{2.5} control technologies

PM/ PM ₁₀ / PM _{2.5} control technology	Emission Rate (lb PM/ PM ₁₀ / PM _{2.5} per MMBtu)
ESP with multiclone	0.02
Baghouse with multiclone	0.02
Venturi Scrubber	0.30
Low sulfur fuels	0.33
Good Combustion practices	0.33-0.56

Step 4 – Economic, Energy and Environmental Impacts

In EPA's review, three biomass stoker facilities have proposed lower rates of total particulate emissions than SPI- Anderson. The 0.01 lb/MMBtu particulate emissions limit for Laidlaw Berlin Biopower was only for filterable particulate, not total particulate, and the project has been canceled. The succeeding total particulate emission levels in Table 7.1-5 for 0.18 lb/MMBtu and 0.19 lb/MMBtu of total particulate have been proposed but have not been demonstrated in practice. Moreover, the increased levels of control for total particulate in both of cases were proposed with different control technologies.

In our review, EPA found that the lowest achievable total particulate emissions demonstrated in practice from biomass stoker boilers have been achieved with fabric filters or ESPs. With equivalent levels of control, SPI considered the potential economic, energy and environmental impacts from each control system. Baghouses require additional energy to overcome increased pressure drops that occur during the control of particulate. ESP systems use electricity to create an electric field, but typically have lower overall energy requirements than baghouses. As stated earlier, fabric filters may also have an increased fire danger at biomass facilities due to the carbonaceous fly ash.

Step 5 – Select BACT

Based on a review of the available control technologies for PM, PM₁₀ and PM_{2.5} emissions from biomass boilers selected for this purpose, we have concluded that BACT

for the stoker boiler to perform this operation is 0.02 lb/MMBtu (3-hour block average) using a multiclone and ESP. We are also requiring a lb/hr mass emission rate of 9.4 lb/hr (3-hour block average) during normal operations.

7.1.3. Startup and Shutdown BACT Limits

The boiler startup process begins by igniting a pile of biomass fuel on the grate and firing two 62.5 MMBtu/hr natural gas burners located near the steam tubes. After approximately 12 hours, the boiler will be at about 50 % of full load and attain a sufficient steady state temperature supporting the activation of the SNCR system. Once the boiler has reached normal operating temperature, as specified by the boiler manufacturer, startup has concluded and the boiler will operate under normal conditions. Shutdown begins when the fuel feed is curtailed and the unit begins cooling. Shutdown ends when the recorded temperature at the superheater outlet reaches 150°F and remains so for at least one hour, or 24 hours has elapsed since the shutdown process began. Add-on particulate controls will be operating during all phases of startup and shutdown. The SNCR will be operating at all appropriate temperature ranges, as specified by the SNCR manufacturer. During startup and shutdown, the generator shall be disconnected from the electrical grid.

Table 7.1-7 lists the startup and shutdown BACT emission and averaging times. Table 7.1-7 also lists the maximum amount of time for a startup and shutdown event.

Table 7.1-7: BACT for Startup and Shutdown

Pollution and Duration Limits	
NO_x (hourly average)	70.2 lb/hr
CO (hourly average)	108 lb/hr
PM, PM₁₀, PM_{2.5} (24 hour average)	8.93 lb/hr
SO₂ (hourly average)	2.34 lb/hr
Maximum Duration	24 hours

7.2 BACT for Emergency Engine

The project includes a 256hp (190kW) natural gas-fired emergency engine to run the emergency boiler recirculation pump. The limited operation of this unit results in minimal annual emission rates. This equipment is subject to BACT for NO_x, CO, PM, PM₁₀, PM_{2.5}. A top-down BACT analysis has been performed and is summarized below.

7.2.1 NO_x, CO, PM, PM₁₀, PM_{2.5} Emissions

Step 1 -- Identify all control technologies

The control options for NO_x emissions from engines include SCR, NO_x reducing catalyst, NO_x adsorber, catalyzed diesel particulate filter, catalytic converter, and oxidation catalyst. A catalytic converter and oxidation catalyst are also control options for CO

emissions. A particulate filter/trap can be added for the control of PM, PM₁₀, and PM_{2.5} emissions,

Unlike the main biomass boiler, the emergency engine will be limited in operation and is required to be certified in compliance with NSPS requirements, including emission limits, upon purchase. A review of other BACT determinations was not performed because it is very unlikely that a more detailed review would change the final determination due to the limited use and annual emission rates associated with the proposed limits. The potential to emit for all criteria pollutants subject to BACT review is less than 200 lbs/yr.

Different types of engines have different emission requirements based on the type of engine being purchased. Engine manufacturers may need to employ some of the control technologies identified above in order to comply with the NSPS emission limits, depending on the type of engine and the applicable limits. The applicant is proposing to install an emergency engine for infrequent recirculation pump needs. As a result, SPI must purchase engines that comply with the NSPS and meet the emission requirements for emergency engines. However, we note that the applicant could purchase engines that meet the NSPS standards for non-emergency engines, which have more stringent limits, and operate them as emergency engines. As a result, this review identifies the control technologies to be:

- NSPS-compliant emergency engine
- Engine that meets NSPS for non-emergency engines
- Limiting use (limits on the hours of operation)

Step 2 – Eliminate technically infeasible control options

All of the control technologies identified are assumed to be technically feasible.

Step 3 – Rank remaining control technologies

The available control technologies are ranked according to control effectiveness in Table 7.2-1.

Table 7.2-1: NSPS Limits for Engines

Engine Type (190kW)	NO_x+NMHC (g/kW-hr)	CO (g/kW-hr)	PM (g/kW-hr)
Non-emergency engine	0.59	3.5	0.02
Emergency engine	4.0	3.5	0.20

Step 4 – Economic, Energy and Environmental Impacts

Due to economic impacts and limited environmental benefit, the use of add-on controls for the emergency engine and purchasing an engine that meet NSPS standards for a non-emergency engine and operating it as an emergency engine would be impractical in this case. This is illustrated in Table 7.2-2 by the potential emissions from the emergency engine (based on 100 hours of operation per year and complying with the NSPS for emergency engines). Requiring the additional reductions in emissions that would be

gained by use of engines that meet NSPS standards for non-emergency engines would have very little environmental benefit and not justify the cost.

Table 7.2-2: Summary of PTE for 190 kW Emergency Engine

Pollutant	Emergency Engine (tpy)
NO _x	0.039
CO	0.306
PM, PM ₁₀ , PM _{2.5}	0.0011

Step 5 – Select BACT

Based on a review of the available control technologies, we have concluded that BACT is limiting the hours of operation and the emission limits listed in Table 7.2-3 based on a 3-hour average. It is assumed that newly purchased engines would be the most energy efficient available and that operating in compliance with NSPS requirements will ensure that each engine is properly maintained and as efficient as possible.

Table 7.2-3: Summary of BACT for 190 kW Emergency Engine

Engine Type	NO _x +NMHC (g/kW-hr)	CO (g/kW-hr)	PM (g/kW-hr)
Emergency engine	4.0	3.5	0.20

7.3. BACT for Cooling Towers

The proposed project also requires a cooling tower system to dissipate the heat load into the atmosphere. The cooling tower system is subject to BACT for PM, PM₁₀, and PM_{2.5}. A top-down BACT analysis has been performed and is summarized below. The applicant conservatively assumed PM, PM₁₀ and PM_{2.5} emissions from the cooling tower were equivalent.

Step 1 - Identify All Control Technologies

The following inherent control options for PM, PM₁₀, and PM_{2.5} emissions include:

- Wet cooling
- Dry cooling
- Wet-Dry Hybrid cooling

Wet cooling

Cooling towers are heat exchangers that are used to dissipate large heat loads to the atmosphere. They are used as an important component in many industrial and commercial processes needing to dissipate heat. Wet cooling towers rely on the latent heat of water evaporation to exchange heat between the process and the air passing through the cooling tower.

A two-cell evaporative cooling tower for this project would require a water load 4.24 gallons per minute per square foot. The expected air velocity is 503 feet per minute. Fugitive particulate emissions would be generated from the cooling tower due to the total dissolved solids (TDS) in the water.

United States
Environmental Protection
Agency

Office of Air and Radiation

March 2011



GUIDANCE FOR DETERMINING BEST AVAILABLE CONTROL TECHNOLOGY FOR REDUCING CARBON DIOXIDE EMISSIONS FROM BIOENERGY PRODUCTION

initially, in many instances energy efficient measures may serve as the foundation for a BACT analysis for GHGs with add-on pollution control technology and other strategies added as they become more accessible.

C. Application of Step 1 to Bioenergy Facilities

At the outset, when considering an application to construct or modify a bioenergy facility, it will be important to address the extent to which the BACT analysis for GHGs should include comparative evaluation of biogenic fuels and other types of fuels, including fossil fuels. However, where a proposed bioenergy facility can demonstrate that utilizing a particular type of biogenic fuel is fundamental to the primary purpose of the project, then at the first step of the top-down process, permitting authorities can rely on that to determine that use of another fuel would redefine the proposed source.

To the extent this showing is made by a permit applicant proposing to construct or modify an electric generating facility that would utilize biomass fuels alone in the primary production process, the options listed as Step 1 of a top-down BACT analysis for GHGs may be limited to (1) utilization of biomass fuel alone, (2) energy efficiency improvements, and (3) carbon capture and sequestration if the source meets the characteristics summarized above and described in more detail in the 2010 GHG Permitting Guidance.

In cases where a permit applicant proposes to co-fire or combine biomass fuels with another primary fuel type, the list of BACT options should include the option of utilizing both types of primary fuels in different combinations. If the applicant proposes a specific proportional allocation or fuel mix (i.e., ≤ 5 percent biomass, ≥ 95 percent fossil fuel) and believes other allocations should be eliminated from consideration in the BACT analysis for GHGs, the permit application should provide an explanation as to why the particular allocation desired by

the applicant is necessary to achieve a fundamental business objective of the project. If the permit applicant is unable to demonstrate that a different allocation of primary fuels would fundamentally redefine the proposed source, the options at Step 1 should include varying allocations of the two primary fuels if the proportional allocation of fuels has the potential to affect the amount of GHGs emitted from the facility or the net atmospheric GHG concentrations.

Although not necessarily a bioenergy facility, recovery furnaces at kraft pulp and paper mills may not have the option of considering alternative fuels. The fundamental purpose of recovery furnaces used at this type of facility is to recover and regenerate the cooking chemicals (used in the pulping process) from the spent liquor or “black liquor” exiting the digesters and evaporators. As a secondary benefit, this process also produces energy. Requiring such a recovery furnace that is fully integrated into the production process to utilize a fuel other than the black liquor to generate this energy would frustrate the primary purpose of these furnaces to recover and regenerate the cooking chemicals. Thus, EPA believes the option of using alternative fuels in a recovery furnace would fundamentally redefine this type of unit. Facilities proposing to use black liquor in the recovery furnace of the kraft pulping process need not include fuels other than black liquor at Step 1 of a top-down BACT analysis for such a unit.

VI. Step 2 – Eliminate technically infeasible options

Step 2 of the top-down BACT analysis should be conducted in the same manner for bioenergy facilities as other types of sources. Step 2 is discussed in detail in the 2010 GHG Permitting Guidance. With respect to facilities that are co-firing biomass and other fuels, if the record shows that an option that involves using a greater proportion of biomass fuels than proposed by the permit applicant is not technically feasible, it may be eliminated from further consideration at this step with an appropriate justification.

EPA-457/B-11-001
March 2011

PSD and Title V Permitting Guidance for Greenhouse Gases

U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Air Quality Policy Division
Research Triangle Park, NC

modification of an existing facility, EPA's existing regulations state that BACT only applies to emission units that are physically or operationally changed.⁶²

EPA has historically interpreted the BACT requirement to be inapplicable to secondary emissions, which are defined to include emissions that may occur as a result of the construction or operation of a major stationary source but do not come from the source itself.⁶³ Thus, under this interpretation of EPA rules, a BACT analysis should not include (in Step 1 of the process) energy efficient options that may achieve reductions in a facility's demand for energy from the electric grid but that cannot be demonstrated to achieve reduction in emissions released from the stationary source (*e.g.*, within the property boundary). Nevertheless, as discussed in more detail below, EPA recommends that permitting authorities consider in a portion of the BACT analysis (Step 4) how available strategies for reducing GHG emissions from a stationary source may affect the level of GHG emissions from offsite locations.

B. BACT Step 1 – Identify All Available Control Options

General Concepts

The first step in the top-down BACT process is to identify all “available” control options. Available control options are those air pollution control technologies or techniques (including lower-emitting processes and practices) that have the potential for practical application to the emissions unit and the regulated pollutant under evaluation. To satisfy the statutory requirements of BACT, EPA believes that the applicant must focus on technologies that have been demonstrated to achieve the highest levels of control for the pollutant in question, regardless of the source type in which the demonstration has occurred.

Air pollution control technologies and techniques include the application of alternative production processes, methods, systems, and techniques, including clean fuels or treatment or innovative fuel combustion techniques for control of the affected pollutant. In some circumstances, inherently lower-polluting processes are appropriate for consideration as available control alternatives. The control options should include not only existing controls for the source category in question, but also controls determined through “technology transfer” that are applied to source categories with exhaust streams that are similar to the source category in question. The 1990 Workshop Manual provides useful guidelines for issues related to technology transfer among process applications. Primary factors that should be considered are the characteristics of the gas stream to be controlled, the comparability of the production processes (*e.g.*, batch versus continuous operation, frequency of process interruptions, special product quality concerns, etc.), and the potential impacts on other emission points within the source. Also, technologies in application outside the United States should be considered to the extent that the technologies have been successfully demonstrated in practice. In general, if a control option has been demonstrated in practice on a range of exhaust gases with similar physical and chemical characteristics and does not have a significant negative impact on process

⁶² 40 CFR 52.21(j)(3).

⁶³ 44 FR 51924, 51947 (Sept. 5, 1979); 40 CFR 52.21(b)(18).

operations, product quality, or the control of other emissions, it may be considered as potentially feasible for application to another process.

Technologies that formed the basis for an applicable NSPS (if any) should, in most circumstances, be included in the analysis, as BACT cannot be set at an emission control level that is less stringent than that required by the NSPS.⁶⁴ In cases where a NSPS is proposed, the NSPS will not be controlling for BACT purposes since it is not a final action and the proposed standard may change, but the record of the proposed standard (including any significant public comments on EPA's evaluation) should be weighed when considering available control strategies and achievable emission levels for BACT determinations made that are completed before a final standard is set by EPA. However, even though a proposed NSPS is not a controlling floor for BACT, the NSPS is an independent requirement that will apply to an NSPS source that commences construction after an NSPS is proposed and carries with it a strong presumption as to what level of control is achievable. This is not intended to limit available options to only those considered in the development of the NSPS. For example, in addition to considering controls addressed in an NSPS rulemaking, controls selected in lowest achievable emission rate (LAER) determinations are available for BACT purposes, should be included as control alternatives included in BACT Step 1, and may frequently be found to represent the top control alternative at later steps in the BACT analysis.⁶⁵

EPA has placed potentially applicable control alternatives identified and evaluated in the BACT analysis into the following three categories:

- ***Inherently Lower-Emitting Processes/Practices/Designs,***⁶⁶
- ***Add-on Controls, and***
- ***Combinations of Inherently Lower Emitting Processes/Practices/Designs and Add-on Controls.***

The BACT analysis should consider potentially applicable control techniques from all of the above three categories. Lower-polluting processes (including design considerations) should be considered based on demonstrations made on the basis of manufacturing identical or similar products from identical or similar raw materials or fuels. Add-on controls, on the other hand, should be considered based on the physical and chemical characteristics of the pollutant-bearing emission stream.

⁶⁴ 40 CFR 52.21(b)(12). While this guidance is being issued at a time when no NSPS have been established for GHGs, permitting authorities must consider any applicable NSPS as a controlling floor in determining BACT once any such standards are final.

⁶⁵ EPA has stated that technologies designated as meeting lowest achievable emission rate (LAER) – which are required in NSR permits issued to sources in non-attainment areas – are available for BACT purposes, must be included in the list of control alternatives in step 1, and will usually represent the top control alternative. 1990 Workshop Manual at B.5.

⁶⁶ While the 1990 Workshop Manual generally refers to “Inherently Lower Polluting Processes/Practices,” the discussion contained in that portion of the Manual makes it clear that lower emitting *designs* may also be considered in Step 1 of the top-down analysis. See 1990 Workshop Manual at B.14 (stating that “the ability of design considerations to make the process inherently less polluting must be considered as a control alternative for the source”).

As explained later in this guidance, in the course of the BACT analysis, one or more of the available options may be eliminated from consideration because they are demonstrated to be technically infeasible or have unacceptable energy, economic, and environmental impacts on a case- and fact-specific basis. However, such options should still be included in Step 1 of the BACT process, since the purpose of Step 1 of the process is to cast a wide net and identify all control options with potential application to the emissions unit under review that should be subject to scrutiny under later steps of the process.

While Step 1 is intended to capture a broad array of potential options for pollution control, this step of the process is not without limits. EPA has recognized that a Step 1 list of options need not necessarily include inherently lower polluting processes that would fundamentally redefine the nature of the source proposed by the permit applicant.⁶⁷ BACT should generally not be applied to regulate the applicant's purpose or objective for the proposed facility.

In assessing whether an option would fundamentally redefine a proposed source, EPA recommends that permitting authorities apply the analytical framework recently articulated by the Environmental Appeals Board.⁶⁸ Under this framework, a permitting authority should look first at the administrative record to see how the applicant defined its goal, objectives, purpose or basic design for the proposed facility in its application. The underlying record will be an essential component of a supportable BACT determination that a proposed control technology redefines the source.⁶⁹ The permitting authority should then take a "hard look" at the applicant's proposed design in order to discern which design elements are inherent for the applicant's purpose and which design elements may be changed to achieve pollutant emissions reductions without disrupting the applicant's basic business purpose for the proposed facility. In doing so, the permitting authority should keep in mind that BACT, in most cases, should not be applied to regulate the applicant's purpose or objective for the proposed facility.⁷⁰ This approach does not preclude a permitting authority from considering options that would change aspects (either minor or significant) of an applicants' proposed facility design in order to achieve pollutant reductions

⁶⁷ *In re Prairie State Generating Company*, 13 E.A.D. 1, 23 (EAB 2006).

⁶⁸ See, generally, *In the Matter of American Electric Power Service Corporation, Southwest Electric Power Company, John W. Turk Plant*, Petition No. VI-2008-01 (Order on Petition) (December 15, 2009) (title V order referencing and applying framework developed by the EAB); *In the Matter of Cash Creek Generation, LLC*, Petition Nos. IV-2008-1 & IV-2008-2 (Order on Petition) (December 15, 2009) (same).

⁶⁹ *In re Desert Rock Energy Company*, PSD Appeal No. 08-03 et al. (EAB Sept. 24, 2009), slip op. at 65, 76.

⁷⁰ The EPA Environmental Appeals Board has applied this framework for evaluating redefining the source questions in three cases involving coal-fired power plants. *In re Desert Rock Energy Company*, PSD Appeal No. 08-03 et al. (EAB Sept. 24, 2009); *In re Northern Michigan University*, PSD Appeal No. 08-02 (EAB Feb. 18, 2009); *In re Prairie State Generating Company*, 13 E.A.D. 1 (EAB 2006). For additional examples of how EPA approached the redefining the source issue in the context of power plants prior to developing this analytical framework, see the following decisions. *In re Old Dominion Electric Cooperative*, 3 E.A.D. 779 (Adm'r 1992); *In re Hawaiian Commercial & Sugar Co.*, 4 E.A.D. 95 (EAB 1992); *In re SEI Birchwood Inc.*, 5 E.A.D. 25 (EAB 1994). EPA also considered this issue in the context of waste incinerators prior to developing the recommended analytical framework. *In re Pennsauken*, 2 E.A.D. 667 (Adm'r 1988); *In the Matter of Spokane Regional Waste-to-Energy Facility*, 2 E.A.D. 809 (Adm'r 1989); *In the Matter of Brooklyn Navy Yard Resource Recovery Facility*, 3 E.A.D. 867 (EAB 1992); *In re Hillman Power Co., LLC*, 10 E.A.D. 673, 684 (EAB 2002). In another case, EPA considered this question in the context of a conversion of a natural-gas fired taconite ore facility to a petcoke fuel. *In re Hibbing Taconite Co.*, 2 E.A.D. 838 (Adm'r 1989). For an example of the application of this concept to a fiberglass manufacturing facility, see *In re Knauf Fiber Glass*, 8 E.A.D. 121 (EAB 1998).

that may or may not be deemed achievable after further evaluation at later steps of the process. EPA does not interpret the CAA to prohibit fundamentally redefining the source and has recognized that permitting authorities have the discretion to conduct a broader BACT analysis if they desire.⁷¹ The “redefining the source” issue is ultimately a question of degree that is within the discretion of the permitting authority. However, any decision to exclude an option on “redefining the source” grounds must be explained and documented in the permit record, especially where such an option has been identified as significant in public comments.⁷²

In circumstances where there are varying configurations for a particular type of source, the applicant should include in the application a discussion of the reasons why that particular configuration is necessary to achieve the fundamental business objective for the proposed construction project. The permitting authority should determine the applicant’s basic or fundamental business purpose or objective based on the record in each individual case. For example, the permitting authority can consider the intended function of an electric generating facility as a baseload or peaking unit in assessing the fundamental business purpose of a permit applicant.⁷³ However, a factor that might be considered at later steps of the top-down BACT process, such as whether a process or technology can be applied on a specific type of source (Step 2) or the cost of constructing a source with particular characteristics (Step 4), should not be used as a justification for eliminating an option in Step 1 of the BACT analysis. Thus, cost savings and avoiding the risk of an apparently achievable technology transfer are not appropriately considered to be a part of the applicant’s basic design or fundamental business purpose or objective.⁷⁴ Since BACT Step 4 also includes consideration of “energy” impacts from the control options under consideration, such impacts should not be used to justify excluding an option in Step 1 of a top-down BACT analysis.

The CAA includes “clean fuels” in the definition of BACT.⁷⁵ Thus, clean fuels which would reduce GHG emissions should be considered, but EPA has recognized that the initial list of control options for a BACT analysis does not need to include “clean fuel” options that would fundamentally redefine the source. Such options include those that would require a permit applicant to switch to a primary fuel type (*i.e.*, coal, natural gas, or biomass) other than the type of fuel that an applicant proposes to use for its primary combustion process. For example, when an applicant proposes to construct a coal-fired steam electric generating unit, EPA continues to believe that permitting authorities can show in most cases that the option of using natural gas as a primary fuel would fundamentally redefine a coal-fired electric generating unit.⁷⁶ Ultimately,

⁷¹ *In re Hawaiian Commercial & Sugar Co.*, 4 E.A.D. at 100; *In re Knauf Fiber Glass*, 8 E.A.D. at 136.

⁷² *In re Desert Rock Energy Company*, slip op. at 70-71, 76-77; *In the Matter of Cash Creek Generation*, Order at 7-10.

⁷³ *In re Prairie State Generating Company*, 13 E.A.D. at 25 (recognizing distinction between sources designed to provide base load power and those designed to function as peaking facilities).

⁷⁴ *In re Prairie State Generating Company*, 13 E.A.D. at 23, n.23.

⁷⁵ 42 USC 7579(3). EPA has not yet updated the definition of BACT in the PSD regulations to reflect the addition of the “clean fuels” language that occurred in the 1990 amendments to the Clean Air Act. 40 CFR 52.21(b)(12); 40 CFR 51.166(b)(12). Nevertheless, EPA reads and applies its regulations consistent with the terms of the Clean Air Act.

⁷⁶ *See, e.g.*, 1990 Workshop Manual at B.13; *In re Old Dominion Electric Cooperative*, 3 E.A.D. at 793-94; *In re SEI Birchwood Inc.*, 5 E.A.D. at 28, n. 8. *But see In re Hibbing Taconite Co.*, 2 E.A.D. 838, 843(Adm’r 1989) (finding it reasonable to consider burning natural gas instead of or in combination with coal where the plant at issue was already equipped to burn natural gas).

however, a permitting authority retains the discretion to conduct a broader BACT analysis and to consider changes in the primary fuel in Step 1 of the analysis. EPA does not classify the option of using a cleaner form of the same type of fuel that a permit applicant proposes to use as a change in primary fuel, so these types of options should be assessed in a top-down BACT analysis in most cases.⁷⁷ For example, a permitting authority may consider that some types of coal can have lower emissions of GHG than other forms of coal, and they may insist that the lower emitting coal be evaluated in the BACT review. Furthermore, when a permit applicant has incorporated a particular fuel into one aspect of the project design (such as startup or auxiliary applications), this suggests that a fuel is “available” to a permit applicant. In such circumstances, greater utilization of a fuel that the applicant is already proposing to use in some aspect of the project design should be listed as an option in Step 1 unless it can be demonstrated that such an option would disrupt the applicant’s basic business purpose for the proposed facility.⁷⁸

Although not required in Step 1 of the BACT process, the applicant may also evaluate and propose to apply innovative technologies that qualify for coverage under the innovative control technology waiver in EPA rules.⁷⁹ Under this waiver, a source is allowed an extended period of time to bring innovative technology into compliance with the required performance level. To be considered “innovative,” a control technique must meet the provisions of 40 CFR 52.21(b)(19) or, where appropriate, the applicable definition in a state SIP. In the early 1990s, EPA did not consider it appropriate to grant applications for this waiver for proposed projects that were the same as or similar to projects for which the waiver had previously been granted.⁸⁰ However, in 1996, EPA said that it was inclined to allow additional waivers if the criteria in the CAA for such a waiver under the NSPS program were met. EPA proposed revisions to this provision in the PSD rules to incorporate the statutory criteria from the NSPS program, which specifies that such waivers may not exceed the number the administrator finds necessary to ascertain whether the criteria for issuing a waiver are met.⁸¹ Though the 1996 proposal was never issued as final policy, EPA continues to adhere to the view expressed in that 1996 proposal and will consider approving more than one waiver under these conditions.

GHG-Specific Considerations

Permit applicants and permitting authorities should identify all “available” GHG control options that have the potential for practical application to the source under consideration. The application of BACT to GHGs does not affect the discretion of a permitting authority to exclude options that would fundamentally redefine a proposed source. GHG control technologies are

⁷⁷ See *In re Old Dominion Electric Cooperative*, 3 E.A.D. at 793 (stating that the BACT analysis includes consideration of fuels cleaner than that proposed by the applicant); *In re Inter-Power of New York*, 5 E.A.D. 130, 145-150 (EAB 1994) (upholding permitting authorities BACT analysis involving coals with different sulfur contents). But see *In re Prairie State Generating Company*, 13 E.A.D. at 27-28 (finding the permitting authority properly excluded consideration of lower sulfur coal as redefining the source since the power plant at issue was co-located with a mine and designed to burn the coal from that mine).

⁷⁸ *In the Matter of Cash Creek Generation*, Order at 7-10.

⁷⁹ 40 CFR 52.21(v); 40 CFR 51.166(s).

⁸⁰ 1990 Workshop Manual at B.13; Memo from Ed Lillis, Chief, Permits Program Branch, to Kenneth Eng, Chief, Air Compliance Branch, *Kamine Development Corporation's (KDC) Request for a Prevention of Significant Deterioration (PSD) Innovative Control Technology Waiver* (August 20, 1991).

⁸¹ 61 FR 38250, 38281 (July 23, 1996).



Biomass-Fired Cogeneration
Project Authority to Construct
and Prevention of Significant
Deterioration Permit Application
Anderson, California

Prepared for:
Sierra Pacific Industries
Redding, California

Prepared by:
ENVIRON International Corporation
Lynnwood, Washington

Date:
March 2010

Project Number:
29-23586A

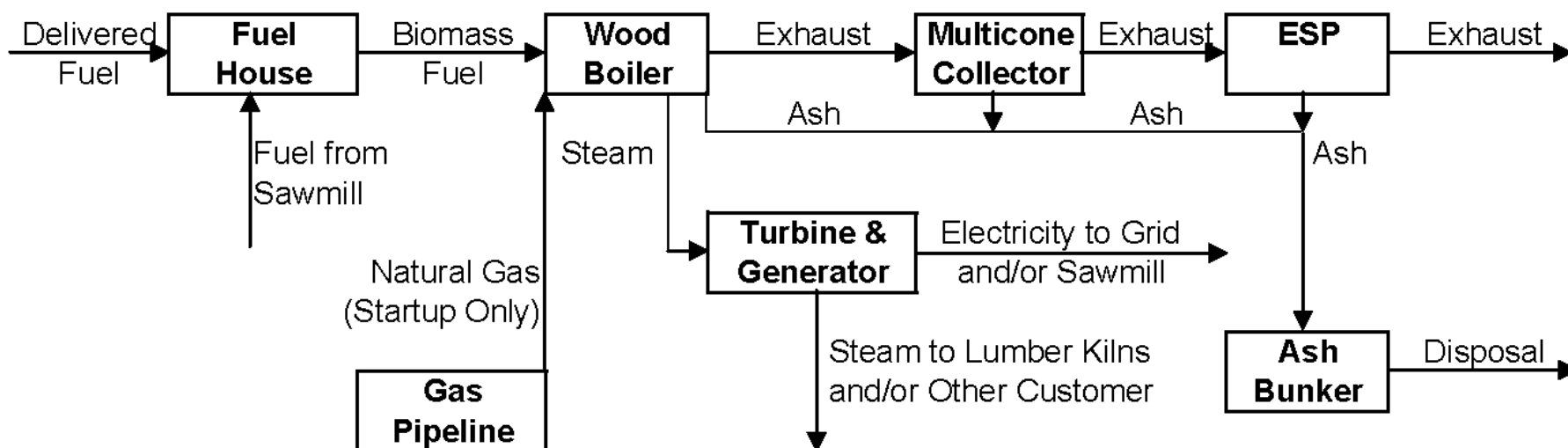


Figure 2-1. Project Schematic Flow Diagram

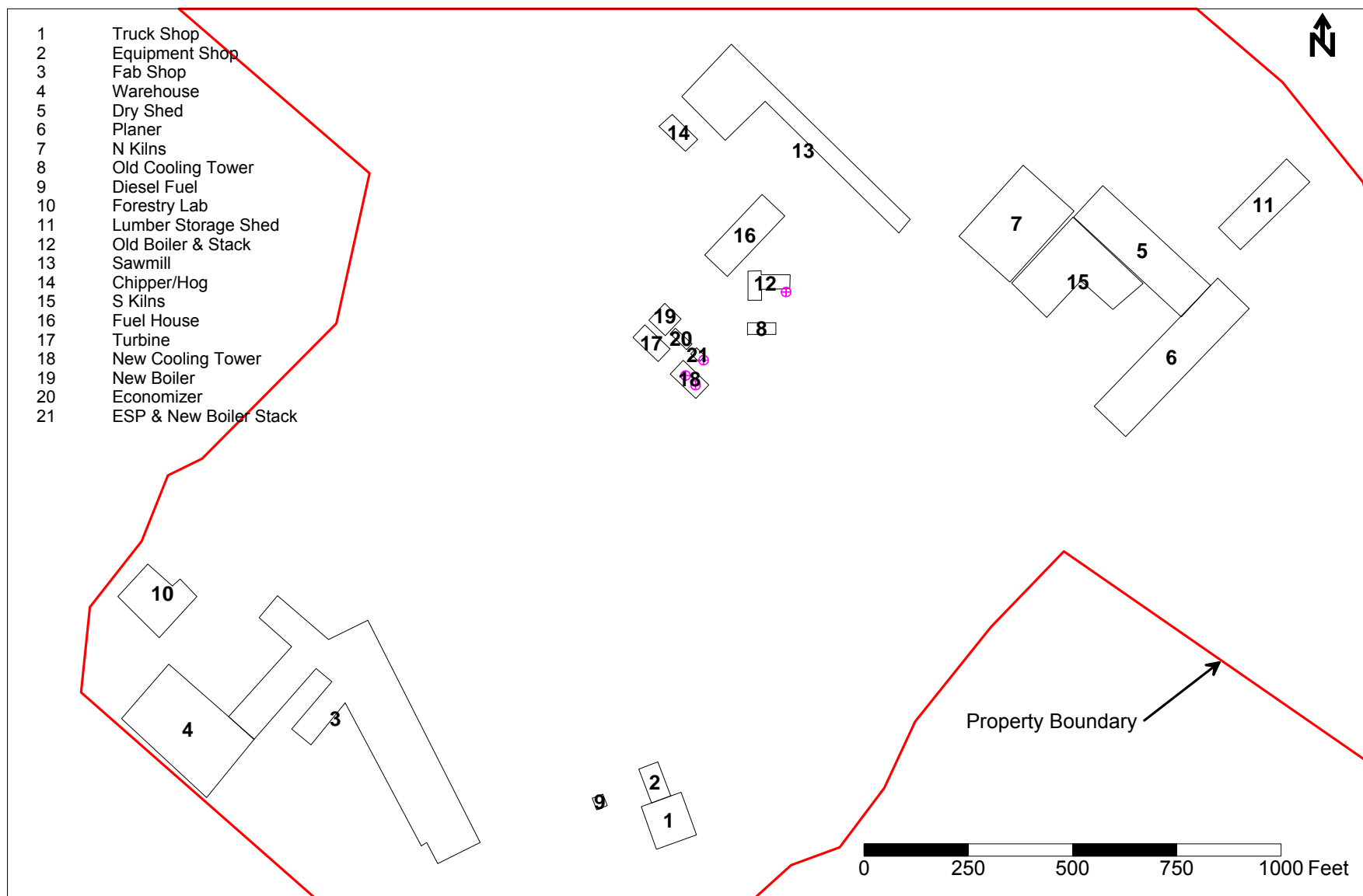


Figure 4-3. Source and Significant Structure Locations

Kelly, Shaheerah

From: Shane Young [SWyoung@spi-ind.com]
Sent: Friday, September 27, 2013 3:51 PM
To: Kelly, Shaheerah
Subject: RE: SPI Anderson Project

Shaheerah,

I did some checking and our Authority to Construct states that the use of natural gas in our boiler is limited to 500 hours per year or 5.7%. It also states for startup, shut down and flame stabilization.

A very simple definition of flame stabilization: "To maintain the proper combustion of the fuel being burned".

An example would be typically in the wetter times of the year when we see a good amount of rainfall we may get a slug or pocket of wet fuel in the boiler. When this occurs we see our CO emissions rise, at times above our permit limits. The flame has become unstable. It normally takes anywhere from 1 to 3 hours to purge this fuel and replace it with a drier fuel. The ability to burn natural gas during this period allows us to stay within our permit limits while we rotate our fuel to get the boiler back to normal operation. Another note is we do manage our fuel. We blend and mix different types of fuel to avoid the occurrence of a wet pocket.

Let me know if you need anything else. Have a good weekend.

Best Regards

Shane Young
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Anderson Ca. 96007
P 530-378-8356
C 530-604-0025
swyoung@spi-ind.com

From: Kelly, Shaheerah [<mailto:Kelly.Shaheerah@epa.gov>]
Sent: Friday, September 27, 2013 3:08 PM
To: Shane Young
Subject: SPI Anderson Project

Hi Shane,

Thanks for answering my questions about the facility by phone this afternoon. As a follow up, can you please describe "flame stabilization" as it relates to the proposed biomass boiler.

Best regards,

Shaheerah Kelly
U.S. Environmental Protection Agency, Region 9
Permits Office, Air Division
San Francisco, CA 94105
Phone: 415-947-4156
Fax: 415-947-3579
Email: kelly.shaheerah@epa.gov